PARTS

LIST

GRS

GENERAL RAILWAY SIGNAL

A UNIT OF GENERAL SIGNAL

SIGNAL EQUIPMENT

GRS

GENERAL RAILWAY SIGNAL

A UNIT OF GENERAL SIGNAL

ROCHESTER NEW YORK 14692

MAIN OFFICE

P.O. Box 20600
Rochester, NY 14602-0600
716 783-2000

SALES OFFICES

BOSTON

Suite 106
990 Washington Street
Dedham, MA 02026-6790
617 329-6212

CHICAGO

Prudential Bldg. Room 2120
Prudential Plaza
Chicago, IL 60601
312 467-1221

JACKSONVILLE

8657 Baypine Road
Suite 209
Jacksonville, FL 32256
904 739-1900

KANSAS CITY

Suite 700
4240 Blue Ridge Boulevard
Kansas City, MO 64133
816 356-8040

MONTREAL

General Railway Signal Co. of Canada
Suite 320
Pointe-Claire Commerce Center
6600 TransCanada Highway
Pointe-Claire, Quebec H9R 4S2
514 694-7350

NEW YORK

National Newark Bldg.
744 Broad St., Suite 725
Newark, NJ 07102
201 802-1044

OMAHA

Suite 209
8031 West Center Road
Omaha, NE 68124
402 399-9333

ROANOKE

Liberty Trust Bldg.
Suite 505
101 South Jefferson Street
Roanoke, VA 24011
703 343-8628

SAN RAMON

Crow Canyon Office Park
Suite 210
12 Crow Canyon Court
San Ramon, CA 94583
415 831-8775

GRS

TERMS AND CONDITIONS OF SALE

1) GOVERNING TERMS AND CONDITIONS. This quotation is an offer by us to sell you the goods or services described herein or on the face hereof solely upon the terms and conditions set forth in this quotation. Any acceptance of this offer must be limited to the terms hereof. We shall not be deemed to have waived any of our terms and conditions or to have assented to any exception to or modification of such terms and conditions unless such waiver or assent is in writing and signed by an authorized officer. Your oral or written instructions to manufacture, ship or perform shall constitute acceptance of this offer. Any contract arising out of this offer shall be governed by and construed in accordance with the laws of the State of New York.

No representation of any kind has been made by us except as set forth herein. We will furnish only the quantities and goods and services specifically listed on the face hereof or the pages attached hereto; we assume no responsibility for furnishing other goods or services shown in any plans or specifications for a project to which the goods or services ordered herein pertain. Our published or quoted terms and conditions are subject to change without notice.

2) PRICES. Unless otherwise noted on the face hereof, published or quoted prices are net F.O.B. our plant and subject to change without notice. Service time of a factory-trained serviceman is not included and may be charged extra. In addition to the contract price you shall pay, together with any applicable interest or penalties thereon, the amount of any applicable present or future tax or other government charge upon the production, sale, shipment, export, import or use of goods or services ordered or sold, unless specifically agreed otherwise in writing by the parties.

3) CANCELLATION, DEFERRED DELIVERIES AND RETURNS. You may defer deliveries or cancel orders for goods only by written notice and only upon condition that you make full payment to us for all items which, upon receipt of such notice by us, are within thirty (30) calendar days of completion. All items within thirty (30) days of completion shall be completed within that time.

Partial payment for all items not within thirty (30) calendar days of completion shall be made by you on the basis of actual costs of labor, materials and supplies applied to the production of such items, plus overhead expenses, and plus fifteen percent (15%) of such costs and expenses, provided that such amount shall in no event exceed the purchase price of the items. In the case of hold orders or deferred deliveries, all payments made by you, as provided in this paragraph, will be credited to your account and will be reflected in our invoices upon any resumption of deliveries under your written order. Goods may be returned only when specifically authorized and you will be charged for placing returned goods in saleable condition, any sales expenses then incurred by us, plus a restocking charge and any outgoing and incoming transportation costs which we pay. You may defer or cancel orders for services only upon written notice and only upon condition that payment shall be made by you for our actual costs, plus overhead expenses and plus fifteen percent (15%) of such costs and expenses, provided that such amount shall in no event exceed the purchase price of the services. Any cancellation or rescission by you shall constitute a discharge of any claim by you relating to this transaction.

4) CREDIT AND PAYMENT. Unless otherwise noted on the face hereof, terms are net thirty (30) days in United States dollars. We may decline to furnish services or to complete and deliver goods except for cash, or stop goods in transit whenever for any reason doubt as to your financial responsibility develops. Prorata payments shall become due with partial shipments of goods.

5) DELIVERY AND SHIPPING. Dates for the furnishing of services or delivery, shipment and installation of goods are estimated dates only, and unless otherwise specified, are figured from the date of receipt of complete technical data and approved drawings as such may be necessary. In estimating such dates, no allowance has been made, nor shall we be liable directly or indirectly for, delays of carriers or delays from labor difficulties, energy or other shortages, strikes or stoppages of any sort, fires, accidents, failure or delay in obtaining materials or manufacturing facilities, acts of government affecting us directly or indirectly, bad weather, or any causes beyond our control or causes designated Acts of God or force majeure by any court of law and in the event such delays arise, the estimated delivery date shall be extended accordingly. We will not be liable for any damages or penalties whatsoever, whether direct, indirect, special or consequential, resulting from our failure to perform or delay in performing.

Delivery to common carrier, F.O.B. our plant or warehouse shall constitute delivery and passage of title to you, and risk of loss shall pass to you concurrently. If you or carrier refuse delivery or delay shipment or acceptance, the goods may be stored according to our direction, as your agent, at your risk and expense. During any such period of storage, you shall have title to the goods and bear the risk of loss. All costs subsequent to delivery, including but not limited to the costs of shipment and installation of the goods described herein, shall be borne by you unless otherwise specifically agreed in writing by the parties. Where you are responsible for any delay in shipment of goods, the date of completion of goods may be treated by us as the date of shipment for purposes of payment; completed goods shall be held at your cost and risk and we shall have the right to bill you for reasonable storage and insurance expenses.

Unless you specify in writing, (a) goods will be boxed or crated as we may deem proper for protection against normal handling, and extra charges will be made for preservation, waterproofing and similar added protection of goods, and (b) routing and manner of shipment will be at our discretion, and may be insured at your expense, value to be stated at offer price. A claim for loss or damage in transit must be entered with the carrier and prosecuted by you.

6) WARRANTY. Providing you notify us in writing promptly, if within one (1) year from date of shipment, goods manufactured by us fail to function properly under normal and proper use and service because of defects in material or workmanship demonstrated to our satisfaction to have existed at the time of delivery, we will, reserving the right to either inspect them in your hands or request their return to us, repair or replace at our expense F.O.B. our plant, or give you proper credit for, at our option, such goods determined by us to be defective, if all dismantling, reassembly, packaging and transportation costs are assumed by you. The foregoing shall not apply to goods that shall have been altered or repaired after shipment to you by anyone except our authorized employees, and we will not be liable in any event for alterations or repairs except those made with our written consent. You shall be solely responsible for determining suitability for use and we shall in no event be liable in this respect. Goods manufactured by others but furnished by us will be repaired or replaced, but only to the extent provided in the original manufacturer's warranty to us.

Providing you notify us promptly in writing within ninety (90) days of rendering service to you that the service rendered was incorrectly performed, at our option we will reperform the service or give you proper credit for such service as we determine was deficient.

Our obligations and liabilities hereunder shall not be enforceable until the goods or services have been fully paid for.

THE FOREGOING OBLIGATIONS ARE IN LIEU OF ALL OTHER OBLIGATIONS AND LIABILITIES INCLUDING ALL WARRANTIES OF FITNESS, MERCHANTABILITY OR OTHERWISE, WRITTEN OR ORAL, EXPRESS OR IMPLIED IN FACT OR BY LAW, and state our entire and exclusive liability and your exclusive remedy for any claim in connection with the sale or furnishing of services or goods, their design, suitability for use, installation or operation. You agree that if goods sold hereunder are resold by you, you will include in the contract for resale provisions which limit recoveries against us in accordance with this contract. In case of your failure to include in any such contract for resale terms providing for such limitations, you agree to indemnify and hold us harmless against any liability, loss, cost, damage, or expense (including reasonable attorney's fees) arising out of or resulting from such failure. No employee or agent of ours is authorized to make any warranty other than that which is specifically set forth herein. The provisions in any specification or other document issued by us or attached hereto are descriptive only and are not warranties.

7) LIMITATION OF LIABILITY. Our obligations in paragraph 6. constitute our entire and exclusive liability and your entire and exclusive remedy with respect to the goods or services which are the subject of this transaction and we will in no event be liable for any direct, indirect, special or consequential damages whatsoever, whether grounded in tort (including negligence), strict liability or contract, and our liability under no circumstances will exceed the contract price for the goods or services for which liability is claimed. Any action for breach of contract must be commenced within one (1) year after the cause of action has accrued.

8) REJECTION. If you reject any goods or services, you must notify us of such rejection within thirty (30) days of the delivery or furnishing thereof. Failure to make such notification constitutes acceptance.

9) PATENT INFRINGEMENT. We will not be liable for any claim of infringement by goods manufactured by us in the form in which we supply such goods to you and without regard to their use by you. If you notify us promptly in writing of any such claim of infringement and, if we so request, authorize and give reasonable assistance to us to defend or settle any suit or controversy involving such claim, we will indemnify you against the reasonable expenses of any such suit and will satisfy any judgment or settlement in which we acquiesce, but only to an amount not exceeding the price paid to us for the allegedly infringing goods. If an injunction is issued against the further use of allegedly infringing goods, we shall have the option of procuring for you the right to use the goods, or replacing them with non-infringing goods or of removing them and refunding the purchase price. The foregoing expresses our entire and exclusive warranty and liability as to patents, and we will not be liable for any damages whatsoever suffered by reason of any infringement claimed except as provided herein. You will hold us harmless and indemnified against any and all claims, demands, liabilities, damages, costs and expenses resulting from or connected with any claim of patent infringement arising out of the manufacture by us of goods in accordance with a design or specification which you furnish us. The sale of any goods hereunder does not carry with it any license to use such goods in combination with other goods not purchased from us or our license to use such goods in combination with other goods not purchased from us or our licensees and which combination is subject to any patent owned or controlled by us. Any invention made by us in the performance of a contract with you shall be our exclusive property.

10) SPECIAL JIGS, FIXTURES AND PATTERNS. Any jigs, fixtures, patterns and like items which may be included in an order will remain our property without credit to you. We will assume the maintenance and replacement expenses of such items, but shall have the right to discard and scrap them after they have been inactive for one year without credit to you.

11) INSPECTION. Inspection of goods in our plant by you or your representative will be permitted insofar as this does not unduly interfere with our production workflow, provided that complete details of the inspection you desire are submitted to us in writing in advance.

12) RECORDS, AUDITS AND PROPRIETARY DATA. Neither you nor any representative of yours, nor any other person, shall have any right to examine or audit our cost accounts, books or records of any kind or on any matter, or be entitled to, or have control over, any engineering or production prints, drawings or technical data which we, in our sole discretion, may consider in whole or in part proprietary to ourselves. Any drawings and other information delivered to you or your representative pursuant to this order shall be used solely for purposes of inspection, installation or maintenance. The information shall not be used or disclosed by you or your representative for any other purpose whatsoever.

13) ASSIGNMENT. Your rights and obligations hereunder may not be assigned without our prior written consent.

14) NON-WAIVER. Our failure at any time to require strict performance by you of any of the provisions herein shall not waive or diminish our right thereafter to demand strict compliance therewith or with any other provision. Waiver of any default shall not waive any other default.

15) INDEMNITY. You shall notify us in writing of any accident, injuries to person, damage to property, loss or other occurrence involving other goods or services supplied hereunder, if we might be liable therefor to persons other than you. If you shall fail to so notify us, you shall defend, indemnify and save us harmless from all claims against and liability of us arising out of such occurrence. You shall make full use of any and all safety devices on the goods supplied hereunder and shall follow all safety procedures recommended by us with respect thereto. You shall see to it that all employees and other persons handling such goods shall be fully aware of such safety devices and shall follow any such safety procedures. If any injury or damage is incurred by any person or his property due, in whole or in part, to your failure to comply with this paragraph, you shall defend, indemnify and save us harmless from all claims against and liability of us arising out of such injury or damage.

CATALOG SECTION P30

PARTS LIST

Highway Crossing Warning

FOR ASSEMBLIES, SEE CATALOG SEC. 30-1

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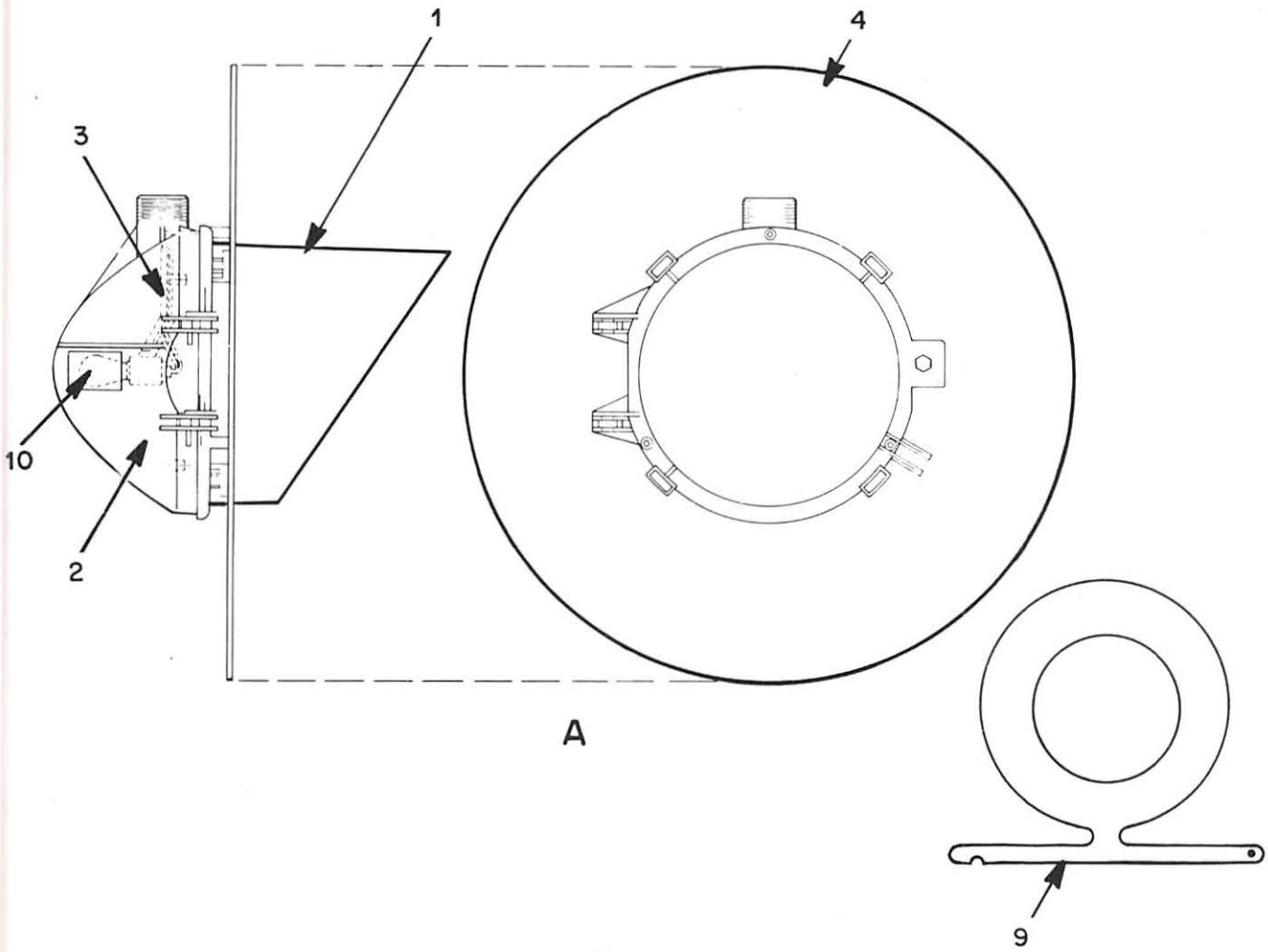
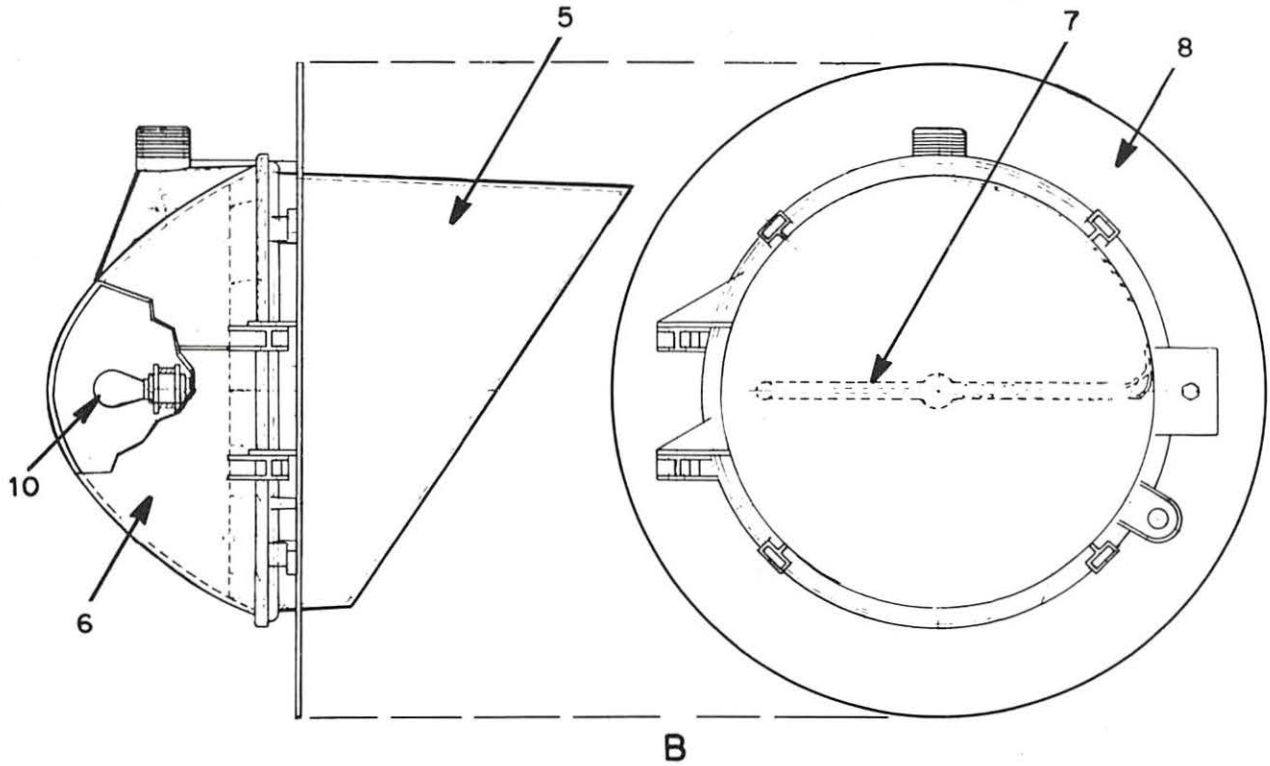
GENERAL RAILWAY SIGNAL
A UNIT OF GENERAL SIGNAL
ROCHESTER NEW YORK 14692

A3332

June 1982





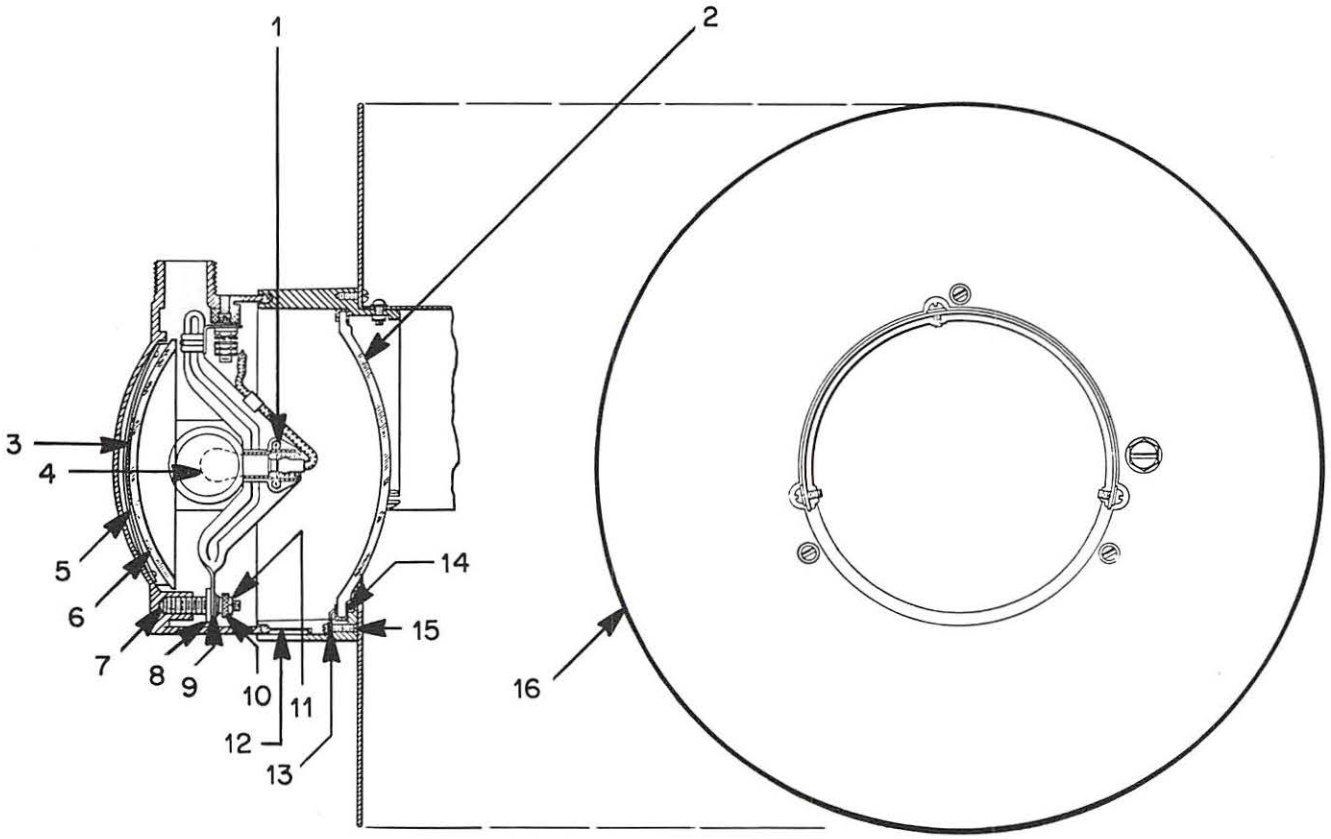
Type LEX-C signal units.

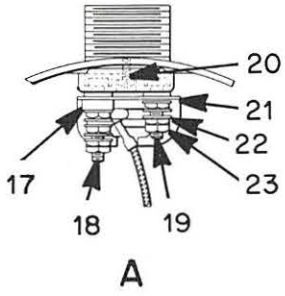
Type LEX-C Signal

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	TYPE LEX-C SIGNAL UNIT COMP., 8" dia. lens, includes lamp	A30-900
B	TYPE LEX-C SIGNAL UNIT COMP., 12" dia. lens, includes lamp	A30-901
1	LENS UNIT, 8" dia.	A30-903
2	CASE COMPLETE (REFLECTOR), 8" dia., with prefocused lamp	A30-907
2a	CASE ONLY (REFLECTOR), 8" dia.	A30-904
3	LAMP HOLDER, for 8" dia. signal, less bulb	A30-905
4	BACKGROUND, includes mounting hardware	A30-906
5	LENS UNIT, 12" dia.	A30-913
6	CASE COMPLETE (REFLECTOR), 12" dia., with prefocused lamp	A30-909
6a	CASE ONLY (REFLECTOR), 12" dia.	A30-914
7	LAMPHOLDER, for 12" dia. signal, less bulb	A30-915
8	BACKGROUND, includes mounting hardware	A30-916
9	PHANKILL, for 8" LEX-C unit	A30-935
9a	PHANKILL, for 12" LEX-C unit	A30-936
10	LAMP BULB, for references see Catalog Section 46	





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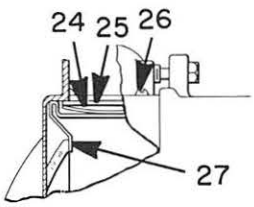

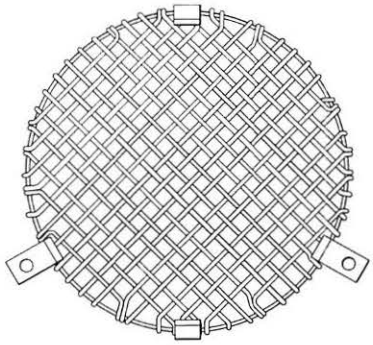

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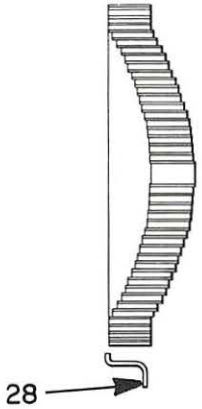


C

Type XC signal unit.

Type XC Signal

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	TERMINAL BLOCK COMPLETE.	P30-229
B	ROUNDEL GUARD, of heavy steel wire	A30-315
C	PHANKILL, blocks external light from signal to prevent illumination of signal from reflected light, complete with hardware for attaching to signal units	A30-310
1	RECEPTACLE COMPLETE, for lamp bulb	P30-263
2	ROUNDEL, red, 8 3/8" dia. has 30 degree spread with 15 degrees downward deflection.	P30-113
2a	ROUNDEL, red, has 30 degree spread, no downward deflection.	P30-268
2b	ROUNDEL, red, has 20 degree spread with 32 degree downward deflection	P30-271
2c	ROUNDEL, red, has 70 degree spread, no downward deflection.	P30-269
3	STRIP, felt, for reflector.	P30-258
4	LAMP BULB, for references see Catalog Section 46	
5	SPRING, for reflector	P30-173
6	REFLECTOR COMPLETE, with felt strip	P30-321
7	SCREW, eccentric, for adjusting receptacle.	P30-316
8	BUSHING, for arm	P30-156
9	WASHER, insulating for arm.	P30-129
10	NUT, knurled, for screw Ref. 7.	P30-135
11	NUT, for locking nut Ref. 10	P65-585
12	SCREEN, ventilating, for bottom of ring	P30-153

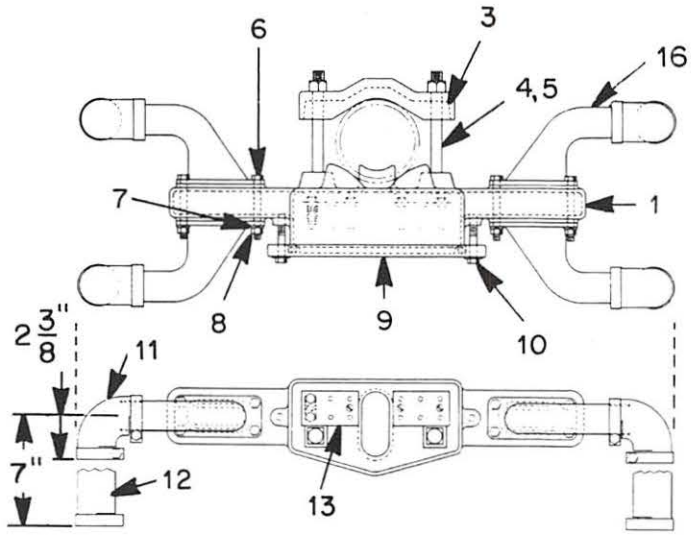
Type XC Signal

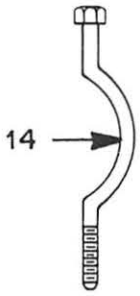
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
13	SPRING, for roundel	P30-138
14	GASKET, for roundel	P73-160
15	SCREW, for clip	P62-217
15a	WASHER, for above	P76-247
16	BACKGROUND	P30-248
17	BUSHING, for terminal post	P30-160
18	SCREW, used as terminal post	P76-100
19	SCREW, used as terminal pose	P30-124
20	SCREW, for mounting terminal block	P62-215
21	CLIP, for receptacle arm	P30-312
22	WASHER, for terminal post	P76-108
23	NUT, for terminal posts	P62-333
24	RING, for glass Ref. 25	P30-217
25	GLASS, for sidelights	P50-122
26	SCREW, for ring Ref. 24	P65-200
26a	NUT, for above	P76-129
27	RETAINER, for reflector and sidelight glass	P30-337
28	CLIP, for Phankill unit	P30-178

Notes


6
3
16
4,5
7
1
8
9
10
2 3/8"
11
7"
12
13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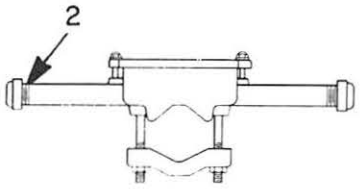
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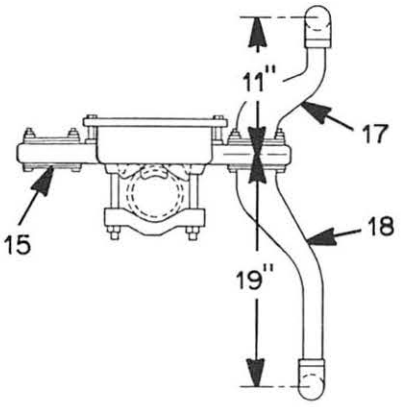
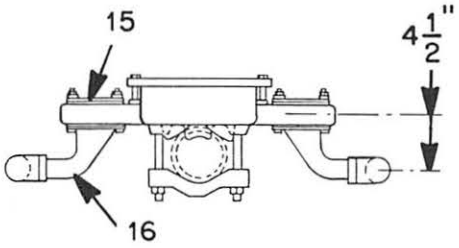
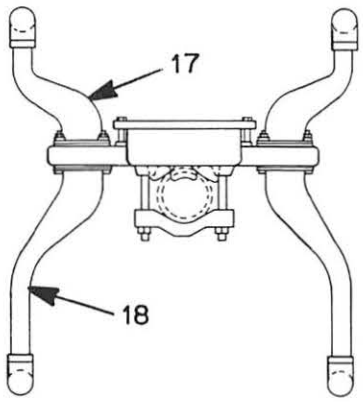

11"
17
15
18
19"

D


15
4 1/2"
16

B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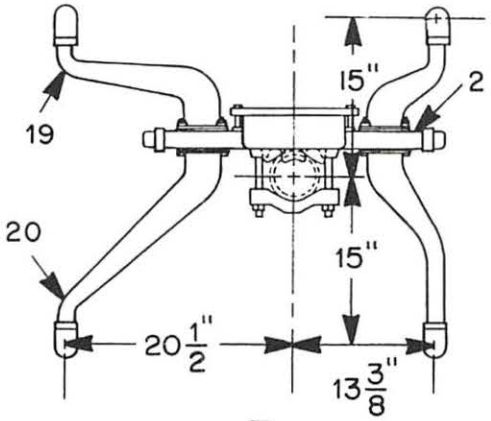
C


19
15"
2
20
15"
20 1/2"
13 3/8"

E

Crossarms for Flashing Light Units

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	CROSSARM ASSEMBLY, for four LEX-C flashing light units, crossarm with junction box, brackets, elbows, clamp and bolts for mounting on 4" dia. pipe	A30-575
A1	CROSSARM ASSEMBLY, same as A except for 5" dia. pipe	A30-582
B	CROSSARM ASSEMBLY, same as Ref. A except crossarm for only two flashing light units	A30-578
B1	CROSSARM ASSEMBLY, same as B except for 5" dia. pipe	A30-585
C	CROSSARM ASSEMBLY, for signal assembly with crossing gate, for four LEX-C flashing light units, crossarm with junction box, brackets, elbows, clamp and bolts for mounting on 5" dia. pipe	A30-581
D	CROSSARM ASSEMBLY, same as Ref. C except crossarm for only two flashing light units	A30-584
E	CROSSARM ASSEMBLY, for signal assembly with crossing gate and right-hand sidewalk arm, for four LEX-C flashing light units, crossarm with junction box, brackets, elbows, clamp and bolts for mounting on 5" dia. pipe	A30-597
E1	CROSSARM ASSEMBLY, same as Ref. E except for left-hand sidewalk arm	A30-598
1	ARM, only	A30-595
2	OLD STYLE ARM	P30-320
3	CLAMP	P30-144
4	BOLT, for 4" dia. pipe	P30-199
5	BOLT, for 5" dia. pipe	P30-350
6	SCREW	P30-351
7	WASHER	P81-122
8	NUT	P50-717

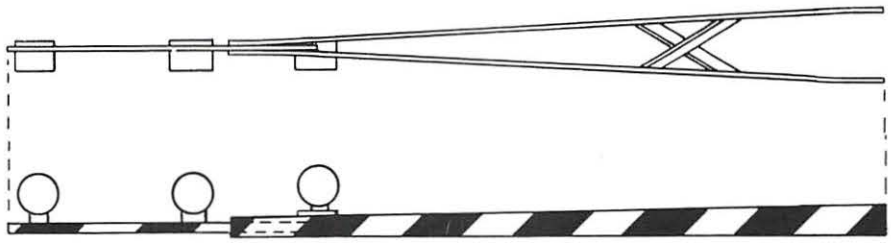
Crossarms for Flashing Light Units

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
9	COVER, for junction box	A30-588
9a	COVER, junction box, for old style arm	P30-247
10	SCREW	P30-170
11	ELBOW, short	A30-592
12	ELBOW, long	A30-593
13	TERMINAL BLOCK	A30-594
13a	TERMINAL BLOCK, for old style arm, Ref. 2	P73-265
14	BOLT, same as Ref. 4 except for 10" dia. pipe	P30-354
14a	BOLT, same as 14 except for 12" dia. pipe	P30-355
15	PLATE, cover for crossarm opening	A30-587
16	BRACKET, for mounting light unit on crossarm	A30-589
17	BRACKET	A30-590
18	BRACKET	A30-591
19	BRACKET	P30-357
20	BRACKET	P30-358

Notes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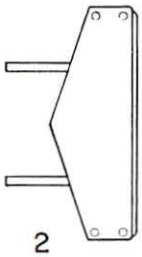
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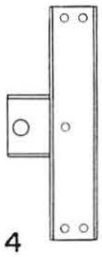
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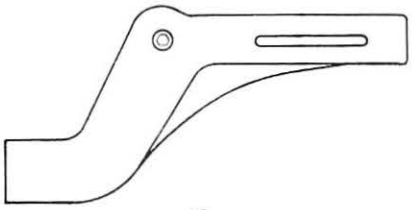
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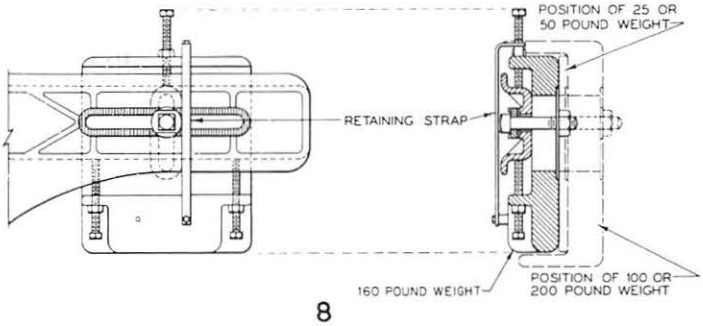
6

7



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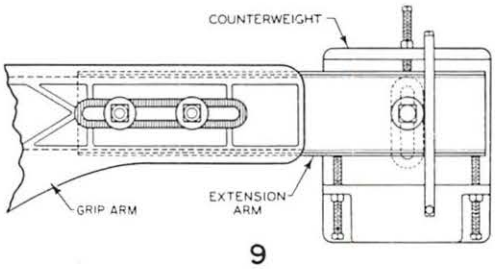


9

Crossing Gate Arms

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	WOODEN GATE ARM, with red and white stripes of reflex-reflecting sheet material, complete with lights, adjustable from 16' to 22' long*	A30-630
1a	WOODEN GATE ARM, same as 16 except adjustable from 24' to 30' long*	A30-631
1b	WOODEN GATE ARM, same as 16 except adjustable from 32' to 38' long*	A30-632

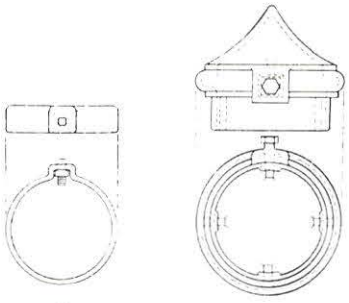
Crossing Gate Arms

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
2	BRACKET, with bolts, nuts and washers for attaching wooden gate arm to counterweight arms	A30-650
3	FIBERGLASS GATE ARM, with red and white stripes of reflex-reflecting sheet material, complete with lights, 14' long*	A30-635
3a	FIBERGLASS GATE ARM, same as 3 except 16' long*	A30-636
3b	FIBERGLASS GATE ARM, same as 3 except 18' long*	A30-637
3c	FIBERGLASS GATE ARM, same as 3 except 20' long*	A30-638
3d	FIBERGLASS GATE ARM, same as 3 except 22' long*	A30-639
3e	FIBERGLASS GATE ARM, same as 3 except 24' long*	A30-640
3f	FIBERGLASS GATE ARM, same as 3 except 26' long*	A30-641
3g	FIBERGLASS GATE ARM, same as 3 except 28' long*	A30-642
3h	FIBERGLASS GATE ARM, same as 3 except 30' long*	A30-643
3i	FIBERGLASS GATE ARM, same as 3 except 32' long*	A30-644
4	BRACKET, with bolts and nuts for attaching fiberglass gate arm to counterweight arms	A30-651
5	ARM, with counterweight slot, left-hand	A30-654
5a	ARM, same as 5 except right-hand	A30-655
6	ARM, gate support, left-hand only	A30-656
7	ARM, sidewalk arm support	A30-657
8	COUNTERWEIGHT, 25 pounds	A30-663
8a	COUNTERWEIGHT, 50 pounds	A30-664
8b	COUNTERWEIGHT COMPLETE, 100 pounds	A30-665
8c	COUNTERWEIGHT COMPLETE, 160 pounds	A30-666
8d	COUNTERWEIGHT COMPLETE, 200 pounds	A30-667
9	EXTENSION ARM, for counterweights	A30-669

* Arm length is measured from centerline of signal mast with gate lowered — actual length of arm will be approx. 2 feet less.



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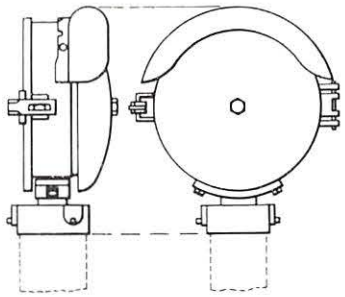

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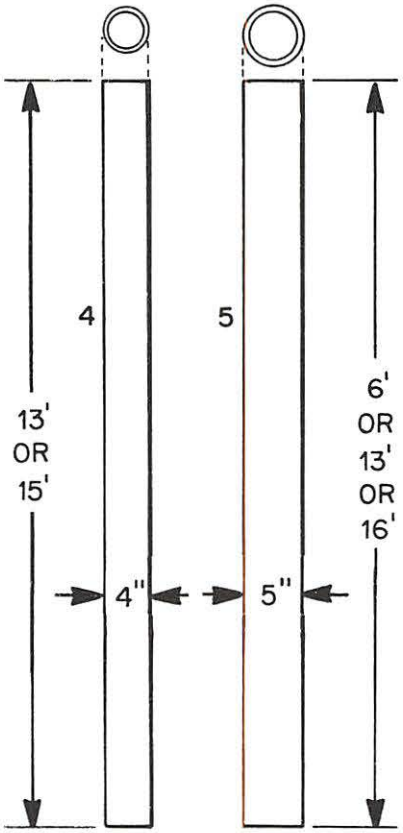

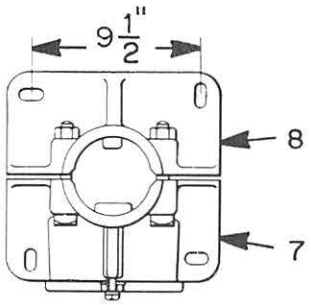

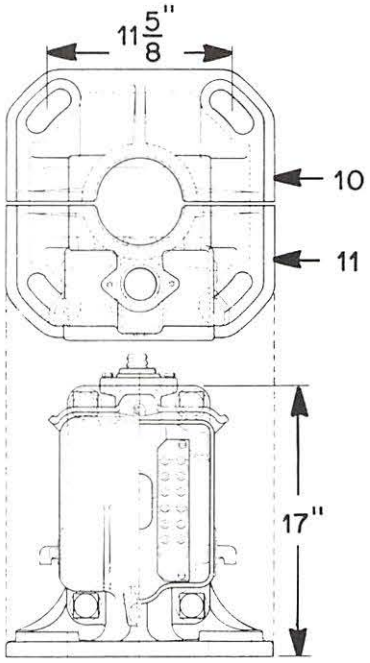

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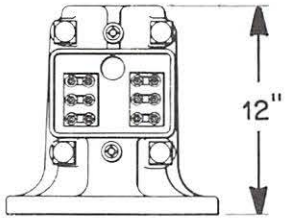

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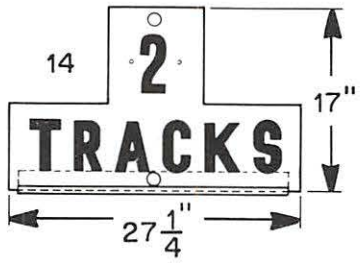
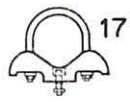
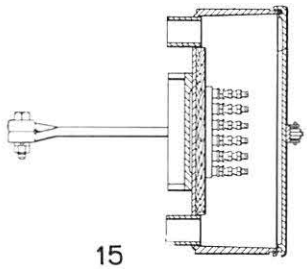




Hardware for mounting signs on 4" or 5" dia pipe (2 included with each sign)



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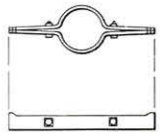

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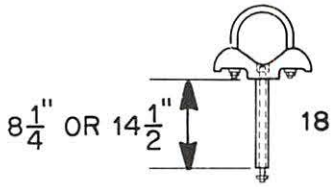


Hardware for mounting signs on 4" or 5" dia pipe (2 included with each sign)

Bases, Pipe, Signs, Etc.

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	FLAT CAP, for top of 4" dia. pipe	A30-520
2	PINNACLE CAP, for top of 5" dia. pipe	A30-521
3	BELL, warning, for 4" dia. pipe	A30-522
3a	BELL, same as 3 except for 5" dia. pipe	A30-523
4	ALUMINUM PIPE, 13' high, 4" dia. predrilled with all necessary holes	A30-528
4a	ALUMINUM PIPE, same as 4 except 15' high	A30-530
5	ALUMINUM PIPE, 13' high, 5" dia., predrilled with all necessary holes	A30-529
5a	ALUMINUM PIPE, same as 5 except 16' high	A30-531
5b	ALUMINUM PIPE, same as 5 except 6' high	A30-533
6	BASE, with junction box, for 4" dia. pipe	A30-536
6a	BASE, without junction box	A30-534
7	HALF BASE, with junction box	P30-222
8	HALF BASE, without junction box	P30-221
9	BASE, with junction box, for 5" dia. pipe	A30-537
9a	BASE, without junction box	A30-535
10	HALF BASE, with junction box	P76-344
11	HALF BASE, without junction box	P76-343
12	RAILROAD CROSSING SIGN, includes all mounting hardware for use with 4" dia. pipe	A30-552
12a	SIGN, same as 12 except for use with 5" dia. pipe	A30-553
13	RAILWAY CROSSING SIGN, includes all mounting hardware for use with 4" dia. pipe	A30-554
13a	SIGN, same as 13 except for use with 5" dia. pipe	A30-555
14	TRACK SIGN, 2 tracks, includes all hardware for mounting on 4" dia. pipe	A30-558
14a	TRACK SIGN, same as 14 except for use on 5" dia. pipe	A30-559
14b	TRACK SIGN, same as 14 except for 3 tracks	A30-560
14c	TRACK SIGN, same as 14a except for 3 tracks.	A30-561
14d	TRACK SIGN, same as 14 except for 4 tracks	A30-562
14e	TRACK SIGN, same as 14a except for 4 tracks.	A30-563
14f	TRACK SIGN, same as 14 except for 5 tracks	A30-564

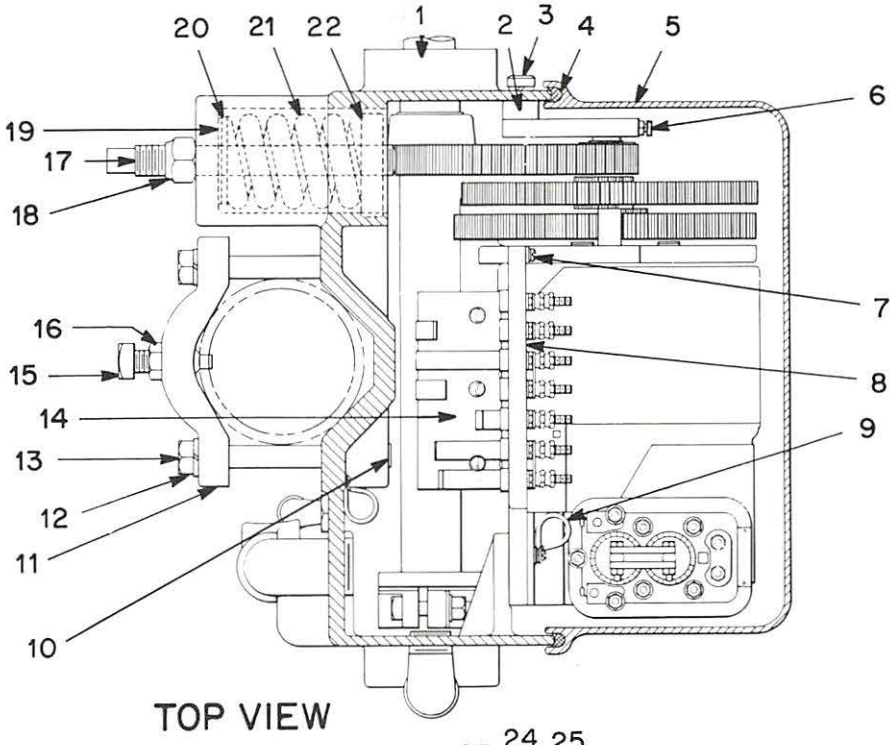
Bases, Pipe, Signs, Etc.

Parts List

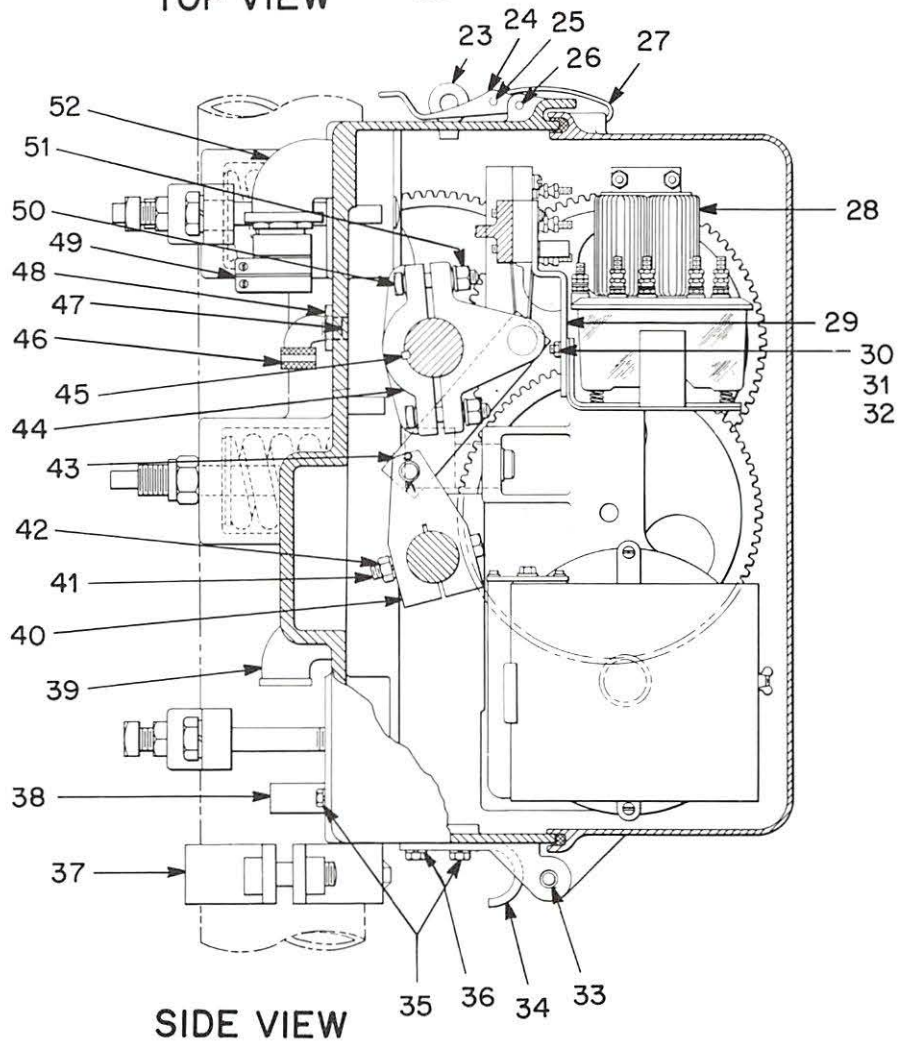
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
14g	TRACK SIGN, same as 14a except for 5 tracks.	A30-565
14h	TRACK SIGN, same as 14 except for 6 tracks	A30-566
14i	TRACK SIGN, same as 14a except for 6 tracks.	A30-567
15	JUNCTION BOX, for 8" dia. pipe complete with six-way terminal block, two 1 3/4" dia. bushings for wires from mast and U bolt	A30-230
15a	JUNCTION BOX, same as 15 except for 6" dia. pipe	A30-229
15b	JUNCTION BOX, same as 15 except for 5" dia. pipe	A30-231
15c	JUNCTION BOX, same as 15 except for 4" dia. pipe	A30-232
16	POLE STEP, for 8" dia. pipe.	A30-243
16a	POLE STEP, for 6" dia. pipe.	A30-241
16b	POLE STEP, for 5" dia. pipe.	A30-239
16c	POLE STEP, for 4" dia. pipe.	A30-240
17	SIGN HARDWARE, for mounting signs on 4" pipe.	A30-568
17a	SIGN HARDWARE, for use on 5" pipe	A30-569
18	SIGN HARDWARE, same as ref. 17a except with 8-1/4" long spacer for use with crossing gate	A30-570
18a	SIGN HARDWARE, same as 18 except 14-1/2" spacer.	A30-571

Notes

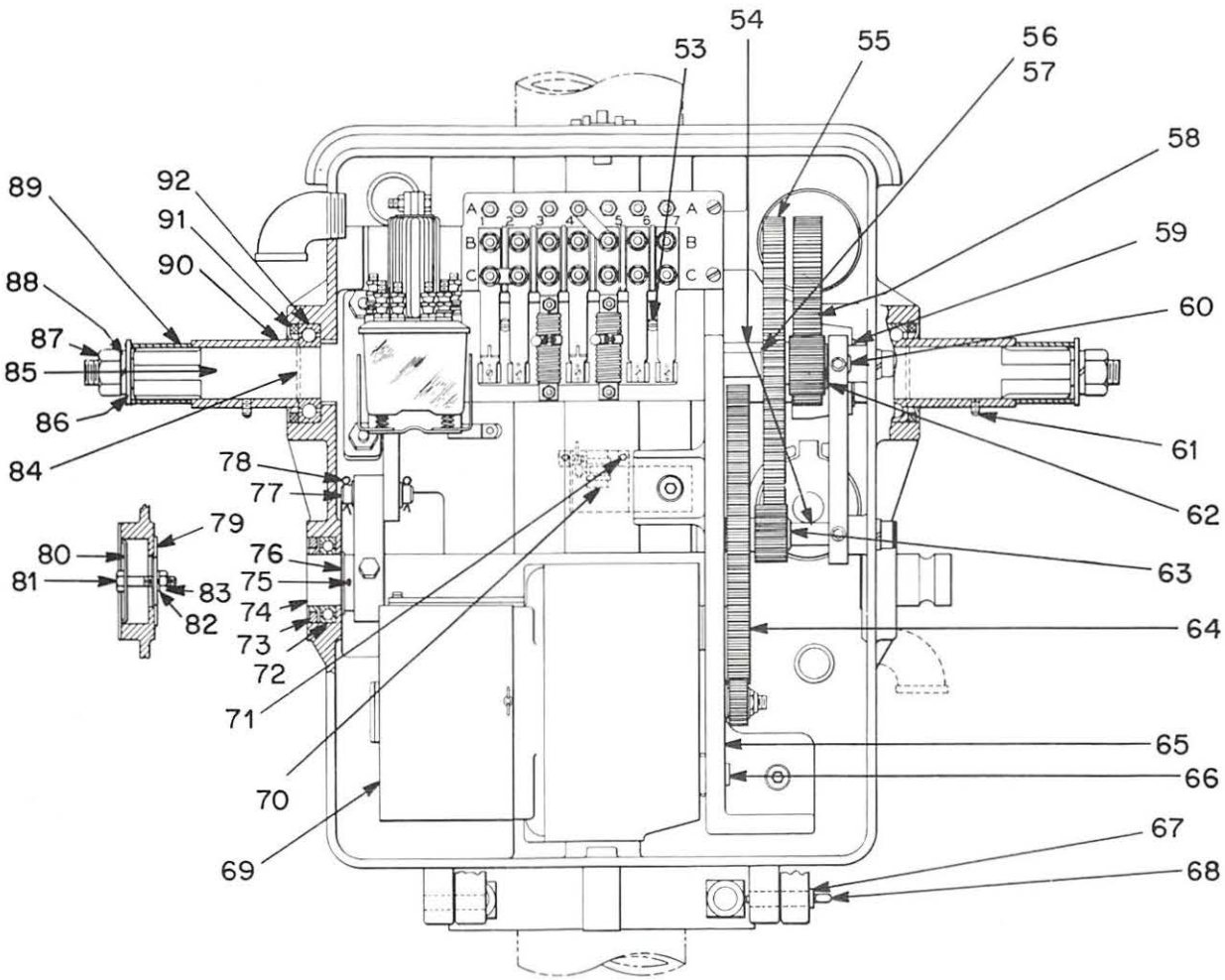


TOP VIEW



SIDE VIEW

Type D gate mechanism.



FRONT VIEW

Type D Gate Mechanism

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
	MECHANISM COMPLETE	A30-615
1	CASE	A30-622
2	PLATE	P30-360
3	SCREW, with washers	P30-361
4	GASKET, for cover	P85-457
5	COVER	A30-623
6	SCREW, with nut	P30-362
7	SCREW	P85-527

Type D Gate Mechanism

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
8	CONTACT BLOCK COMP.	A30-620
8a	MOTOR CONTACT, front	P30-363
8b	FINGER COMP., motor contact, heel	P30-364
8c	LIFTER, motor contact	P30-365
8d	MOTOR CONTACT, heel	P30-366
8e	MOTOR CONTACT, back	P30-367
8f	LIFTER, motor contact	P30-368
9	CABLE TIE	P30-369
10	PLUG	P30-370
11	PIPE CLAMP	P30-371
12	WASHER	P85-105
13	SCREW	P30-372
14	COMMUTATOR COMP.	P30-373
15	SCREW	P30-374
16	NUT	P85-250
17	STUD, spring adjusting	P30-375
18	NUT, elastic stop	P26-217
19	WASHER	P30-376
20	WASHER	P26-200
21	SPRING, buffer	P30-377
22	NUT	P30-378
23	EYE BOLT	P30-379
24	HASP	P30-380
25	ROLLPIN	P85-315
26	ROLLPIN	P30-381
27	STRAP	P30-382
28	RELAY, Type K	A65-345
29	BRACKET	P30-383
30	SCREW, for mounting relay	P50-809
31	WASHER, lock	P81-121
32	NUT	P30-384
33	ROLLPIN	P30-385
34	SPRING, stop	P30-386
35	SCREW	P50-402

Type D Gate Mechanism

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
36	WASHER	P76-106
37	CLAMP COMP.	A30-626
38	CLAMP, for conduit	P30-387
39	VENTILATOR	P30-388
40	CRANK, for sidewalk arm.	P30-389
41	SCREW	P30-390
42	NUT	P85-204
43	LINK COMP..	P30-391
44	CRANK COMP..	P30-392
45	KEY, no. 21 Woodruff	P30-393
46	CONNECTOR.	P30-394
47	PLUG, plastic	P30-395
48	BUSHING, reducing	P30-396
49	COUPLING COMP..	P30-397
50	BOLT & NUT	P30-398
51	WASHER	P50-101
52	ELBOW, 90	P30-399
53	SCREW, with washer.	P30-400
54	SPACER	P30-401
55	GEAR & PINION, 2nd intermediate	A30-618
56	WASHER	P30-402
57	WASHER, shim	P30-403
58	SECTOR	A30-619
59	RING, retaining.	P30-404
60	PIN, gear shaft dowel	P30-405
61	SCREW, set.	P30-406
62	SPACER	P30-407
63	BEARING, roller.	P85-1126
64	GEAR & PINION, 1st intermediate.	A30-617
65	FRAME.	P30-409
66	SCREW, shouldered socket head	P30-410
67	WASHER	P76-108
68	PIN, cotter	P30-411
69	MOTOR COMP	A30-621

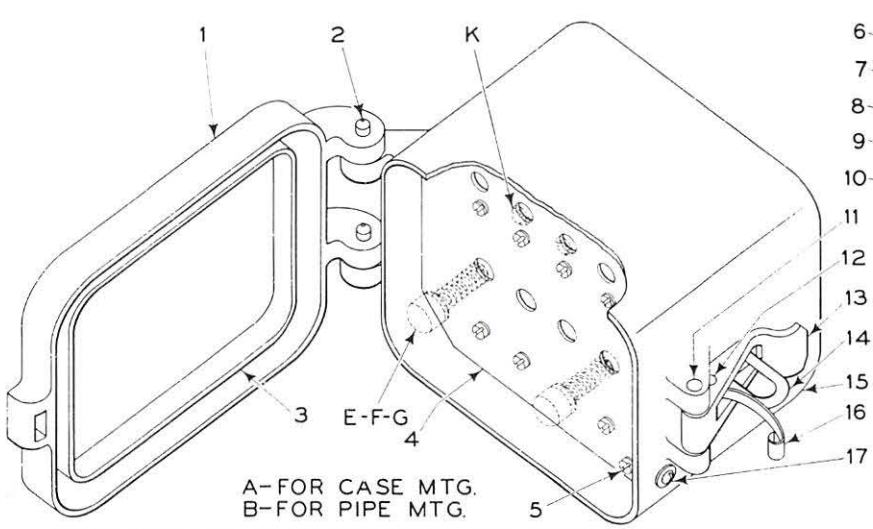
Type D Gate Mechanism

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
70	COUNTER, COMP. (optional equipment)	A30-625
71	HEATER COMP. (optional equipment)	A30-624
72	BEARING	P30-415
73	SEAL	P30-416
74	SHAFT, sidewalk	P30-417
75	PIN, cotter	P85-107
76	WASHER	P30-418
77	PIN	P30-419
78	PIN, cotter	P30-420
79	WASHER	P30-421
80	WASHER	P30-422
81	SCREW	P73-403
82	WASHER	P81-121
83	NUT	P85-12
84	RING	P30-423
85	MAIN SHAFT	P30-424
86	WASHER	P30-425
87	NUT	P85-1348
88	WASHER	P91-230
89	SPACER, for shipping purposes	P30-426
90	SPACER	P30-427
91	SEAL	P30-428
92	MAIN BEARING	P30-429
	KIT, for converting Type D mechanism for use with a sidewalk arm	A30-660

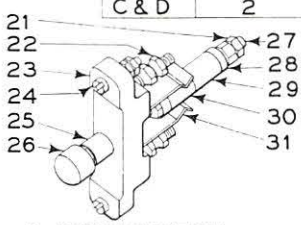
Notes



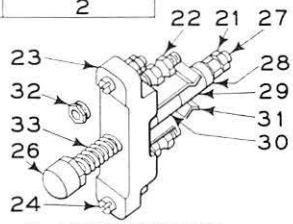
TEST BOX FOR TEST SWITCHES AND INDICATORS

HEIGHT-$6\frac{7}{8}$"
WIDTH-$9\frac{3}{4}$"
DEPTH-$5\frac{1}{2}$"

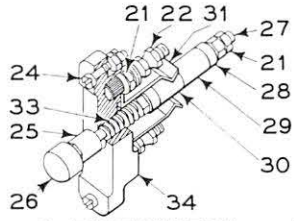
MAXIMUM CAPACITY OF LIGHTS AND SWITCHES		
REF.	LIGHTS	SWITCHES
A &B	2 – 4	2 4 –
C & D	2	2



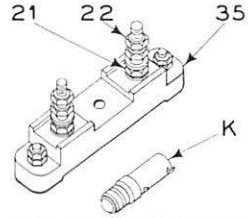
E-TEST SWITCH
PUSH-PULL TYPE



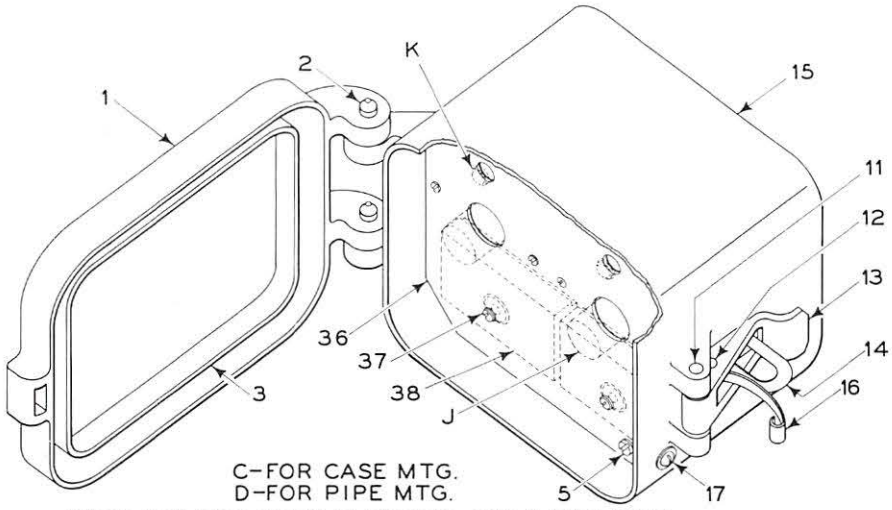
F-TEST SWITCH
PUSH TYPE
SPRING RETURN



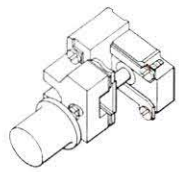
G-TEST SWITCH
PULL TYPE
SPRING RETURN



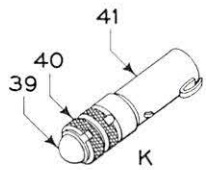
H-LAMP SOCKET (INDICATOR)
AND
TERMINAL BLOCK



TEST BOX FOR PUSH BUTTONS AND INDICATORS
(MAX. 2 EACH)



J
PUSH BUTTON



Test boxes.

Test Boxes

Parts List

These are cast iron boxes with weatherproof, gasketed doors. Each box includes a panel, drilled to accept lamp sockets (indicators), switches or push buttons. See tabulation on opposite page for capacities. Switches, Refs. E, F, and G, are furnished with normally-closed contacts, but they can be rearranged in the field to normally open if desired. All are complete with hardware, ready to install on test box panels. Test switches E, F, and G have binding posts for terminating field wiring. Lamp sockets H, H1, and H2, which include separate terminal blocks, are for use in test boxes A and B. Lamp sockets K, K1, and K2, which do not include terminal blocks, and push button J are for use in test boxes C and D. These boxes have built-in terminal boards for terminating field wiring.

Order by catalog number and name shown in bold type

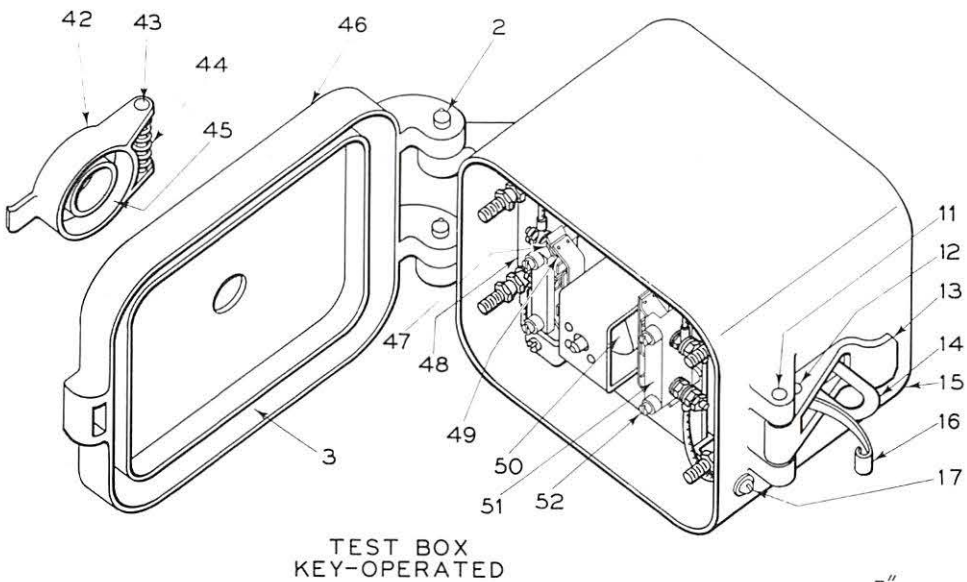
REF.	NAME	CATALOG NUMBER
A	TEST BOX, for bolting on case, panel drilled for test switches and indicating lamps. Order test switches and indicating lamps separately. Includes 1" pipe nipple and all mounting hardware . .	A30-400
B	TEST BOX, for fastening to pipe. Panel drilled for test switches and indicating lamps. Order test switches and indicating lamps separately. Includes 1" pipe nipple, adapter and U-bolt for 4" dia. pipe	A30-403
B1	As above, except for 5" dia. pipe	A30-404
B2	Same as above, except for 6" dia. pipe	A30-405
B3	Same as above, except for 8" dia. pipe	A30-406
C	TEST BOX, for bolting on case. Panel drilled for two push buttons and two indicating lamps. Order push buttons and indicating lamps separately. Includes 1" pipe nipple and all mounting hardware	A30-409
D	TEST BOX, for fastening to pipe. Panel drilled for two push buttons and two indicating lamps. Order push buttons and indicating lamps separately. Includes 1" pipe nipple, adapter, and U-bolts for 4" dia. pipe	A30-412
D1	As above, except for 5" dia. pipe	A30-413
D2	Same as above, except for 6" dia. pipe	A30-414
D3	Same as above, except for 8" dia. pipe	A30-415
E	TEST SWITCH, push-pull type, fits A and B	A30-418
F	TEST SWITCH, push type, spring-return - controlled by cover. Shown in cover-open position, fits A and B	A30-420
G	TEST SWITCH, pull type, spring return, fits A and B.	A30-423

Test Boxes

Parts List

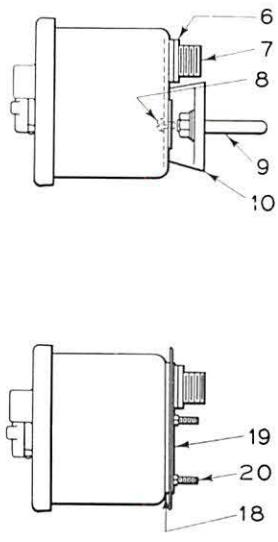
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
H	LAMP SOCKET, with red bullseye. Takes telephone type, slide base lamp (lamp not included, see Catalog Section 46) includes terminal block and connectors for use in boxes A and B	A30-426
H1	As above, except with green bullseye	A30-427
H2	Same as above, except with white bullseye	A30-428
J	PUSH BUTTON, one contact normally open and one normally closed, includes all mounting hardware, fits C and D	A30-431
J1	PUSH BUTTON, only	P30-330
K	LAMP SOCKET, with red bullseye. Takes telephone type, slide base lamp (lamp not included, see Catalog Section 46) includes connectors for use in boxes C and D	A30-434
K1	As above, except with green bullseye	A30-435
K2	Same as above, except with white bullseye	A30-436



TEST BOX
KEY-OPERATED

MOUNTING METHODS



HEIGHT - $6\frac{7}{8}$"
WIDTH - $9\frac{3}{4}$"
DEPTH - $6\frac{1}{2}$"

Test boxes - key operated.

Test Boxes — Key Operated

Parts List

These are cast iron boxes with weatherproof, gasketed doors. Each box has a key-operated switch with two single-pole, single-throw contacts, one contact on the left side of the box and one on the right. Binding posts are included for terminating field wiring. The switches are operated by means of standard railroad keys, in patterns as specified in your order. Keyhole is protected by a gasketed, spring-return cover.

When ordering key-operated test boxes, please send sample or drawing of switch key - if you have not already supplied us with same on previous orders.

Test boxes include 1" pipe nipple and all mounting hardware.

When ordering, specify "Key Test Box" and give catalog number.

KEY ROTATES CLOCKWISE			CATALOG NUMBER				
	CONTACT POSITION			PIPE MOUNTING			
KEY POSITION	LEFT CONTACT	RIGHT CONTACT	CASE MOUNTING	4" dia.	5" dia.	6" dia.	8" dia.
Normal	Closed	Open	A30-450	A30-453	A30-454	A30-455	A30-456
Turned Clock-Wise	Open	Closed					
Normal	Closed	Closed	A30-460	A30-463	A30-464	A30-465	A30-466
Turned Clock-Wise	Open	Open					
Normal	Open	Open	A30-470	A30-473	A30-474	A30-475	A30-476
Turned Clock-Wise	Closed	Closed					
KEY ROTATES CLOCKWISE AND COUNTERCLOCKWISE							
Normal	Closed	Open	A30-480	A30-483	A30-484	A30-485	A30-486
Turned Clock-Wise	Closed	Closed					
Turned Counter-Clock-Wise	Open	Open					
Normal	Open	Open	A30-490	A30-493	A30-494	A30-495	A30-496
Turned Clock-Wise	Closed	Open					
Turned Counter-Clock-Wise	Open	Closed					

Test Boxes

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	COVER, with gasket	P30-261
2	STUD, hinge for covers	P30-126
3	GASKET, for cover, 2' -0 3/4" long. Specify number feet.	P76-132
4	PANEL, for switches	P30-328
5	SCREW, for mounting panel Ref. 4	P62-214
5A	WASHER, lock, for above	P62-401
6	NUT, lock, for nipple	P73-118
7	NIPPLE, 1" pipe thread x 2" long	P30-238
8	SCREW, for fastening case to adapter.	P30-141
8A	WASHER, lock, for above	P85-801
9	U BOLT, for 4" mast	P30-252
9A	U BOLT, for 5" mast	P30-251
9B	U BOLT, for 6" mast	P30-253
9C	U BOLT, for 8" mast	P30-254
10	ADAPTER, for mast mounting.	P30-237
11	PIN, for fastening hasp to case	P30-158
12	PIN, for fastening hasp to strap	P30-134
13	HASP, for cover	P30-172
14	STAPLE, for hasp	P50-441
15	CASE, only	P30-246
16	STRAP, for cover	P30-193
17	SCREW, for padlock chain	P65-200
17A	WASHER, for above	P85-111
18	GASKET, for case	P30-168
19	PLATE, backing, for mounting box on steel case.	P30-209
19A	As above, except for mounting box on aluminum case	P30-210
20	SCREW, for mounting case	P30-142
20A	NUT, for above.	P30-104
20B	WASHER, for above	P85-50
21	NUT, for stud or terminal post	P62-333
22	NUT, for terminal posts	P76-131
22A	WASHER, for above	P76-108
23	BLOCK, only, for Refs. E and F	P30-324
24	SCREW, for mounting switches	P62-217
24A	NUT, for above.	P76-129
24B	WASHER, for above	P62-196

Test Boxes

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
25	BUSHING, for Refs. E and G	P30-161
26	BUTTON, only	P3-127
26A	NUT, jamb,for above	P62-333
27	STUD, for switches	P30-137
28	BUSHING, insulating, 3/16" long for contacts	P30-159
29	BUSHING, insulating, 11/16" long, for contacts	P65-224
30	CONTACT, only	P30-157
31	SPRING, contact	P30-169
32	BUSHING, for switch Ref. F	P30-162
33	SPRING, for switches Refs. F and G	P30-339
34	BLOCK, for switch Ref. G	P30-325
35	TERMINAL BLOCK COMPLETE	P30-230
36	PANEL, only, for pushbuttons	P30-327
37	SCREW, for mounting terminal block	P65-839
37A	NUT, for above	P76-129
37B	WASHER, lock, for above	P62-401
37C	WASHER, for above	P65-517
38	TERMINAL BLOCK COMPLETE	P30-228
39	BULLSEYE, red	P30-232
39A	As above, except green	P30-233
39B	Same as Ref. 39, except white	P30-234
40	NUT, spanner	P30-136
41	SOCKET, for lamp	P30-336
42	COVER, only	P30-249
43	PIN, for cover	P30-130
44	SPRING, for cover	P30-139
45	GASKET, for cover 5-5/16" long. Specify number feet	P76-132
46	COVER COMPLETE, with gasket	P30-262
47	CONTACT, only	P30-255
48	TERMINAL BLOCK COMPLETE, two post	P65-600
48A	TERMINAL BLOCK COMPLETE, three post	P65-601
49	FINGER, complete	P30-256
50	CAM, only	P30-335
51	CONTACT BLOCK COMPLETE	P30-257
52	SCREW, for mounting contact blocks	P30-125
52A	NUT, for above	P65-211
52B	WASHER, lock, for above	P62-406

CATALOG SECTION P30

CROSS - INDEX

HIGHWAY CROSSING PROTECTION

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P30-104	0383-1		NUT	28
P30-124	350		SCREW	6
P30-125	366-3		SCREW	
P30-126	441-173		STUD	
P30-129	493-85		WASHER	5
P30-130	504-324		PIN	29
P30-133	645-6		NUT	26
	(SEE P85)			
P30-134	737-1		PIN	28
P30-135	846-1		NUT	5
P30-136	846-6		NUT	29
P30-137	879-56		STUD	29
P30-138	1228-11		SPRING	6
P30-139	1396-13		SPRING	29
P30-141	3955-6		SCREW	28
P30-142	3955-7		SCREW	28
P30-144	4137-33		CLAMP	
P30-153	5748-52		SCREEN	5
P30-156	6347-18		BUSHING	5
P30-157	6437-1		CONTACT	29
P30-158	6969-1		PIN	28
P30-159	7350-79		BUSHING	29
P30-160	7350-83		BUSHING	6
P30-161	8942-128		BUSHING	29
P30-162	8942-129		BUSHING	29
P30-168	13014-356		GASKET	28
P30-169	13166-2		SPRING	29
P30-170	14071-1		SCREW	10
P30-172	16110-17		HASP	28
P30-173	16111-29		SPRING	5
P30-178	18547-62		CLIP	6
P30-193	30804-22		STRAP	28
P30-199	34331-2		BOLT & NUT	9
P30-209	41885-128		PLATE	28
P30-210	41885-139		PLATE	15
P30-217	43712-4		RING	6
P30-221	43953-12		1/2 BASE	
P30-222	43953-51		1/2 BASE	15
P30-228			BLOCK COMP	
			6 WAY DWG	
			46048-23	
			GR1	
	1225-2	36	WASHER	
	5971-19GR1		BLOCK	
	42843-1	24	NUT	
P30-229	46048-62GR1		TER BLOCK	5
P30-230	46048-71GR1		TERM BLOCK	
P30-232	47501-6		BULLSEYE	29
P30-233	47501-7		BULLSEYE	29
P30-234	47501-8		BULLSEYE	29
P30-237	48678-2		ADAPTER	28
P30-238	48735		NIPPLE	28
P30-245	49127-54		HOOD	
P30-246	49133-77		CASE	28
P30-247	49134-25		COVER	10
P30-248	49162-79		BACKGROUND	6
P30-249	49584-10		COVER	29
P30-251			U BOLT	28
			COMPLETE	
	50357-24		U BOLT	
	1156-12	2	NUT	
	01273-8	2	WASHER	
	01250-17	2	WASHER	
P30-252			U BOLT	28
			COMPLETE	
	50357-28		U BOLT	
	1156-12	2	NUT	
	01273-8	2	WASHER	
	01250-17	2	WASHER	
P30-253			U BOLT	28
			COMPLETE	
	50357-32		U BOLT	
	1156-12	2	NUT	
	01273-8	2	WASHER	
	01250-17	2	WASHER	
P30-254			U BOLT	28
			COMPLETE	
	50357-35		U BOLT	
	1156-12	2	NUT	
	01273-8	2	WASHER	
	01250-17	2	WASHER	
P30-255	50963 GR1		CONTACT	29
P30-257	50972 GR3		BLOCK	29
P30-258	51817-1		STRIP	5
P30-261	52318-24GR3		COVER	28
P30-262	52318-42GR5		COVER	29
P30-263	53058-17GR2		RECEPTACLE	5
P30-312	55065-1		CLIP	6
P30-315	55131-6		CLIP	
P30-316	55134		SCREW	5
P30-320	55215-8		ARM	9
P30-324	55744-6		BLOCK	28
P30-325	55744-7		BLOCK	29
P30-327	55997-335		PANEL	29

C A T A L O G S E C T I O N P30

C R O S S - I N D E X

HIGHWAY CROSSING PROTECTION

CAT.NO.	DRAWING NO. QTY	NAME	PG.
P30-328	55997-574	PANEL	28
P30-336	54603-14GR1	SOCKET	29
P30-337	55133-4	RETAINER	6
P30-339	786-215	SPRING	29
P30-350	0672-3	BOLT & NUT	9
P30-351	21521-1	SCREW	9
P30-354	0135-4	BOLT	10
P30-355	0135-5	BOLT	
P30-357	55884-9	BRACKET	10
P30-358	55884-8	BRACKET	10
P30-360	41885-130	PLATE	19
P30-361		SCREW W/ WASHERS	19
	17708-52	SCREW	
	01273-11	WASHER	
	626-230	WASHER	
P30-362		SCREW & NUT	19
	6954-8	SCREW	
	424-5	NUT	
P30-363	32239-16GR1	CONTACT	20
P30-364	51195-19GR1	FINGER COMP	20
P30-365	23436	SPRING	20
P30-366	45723-3	CONTACT	20
P30-367	45724-3	CONTACT	20
P30-368	23436-1	SPRING	20
P30-369	29855-11	TIE	20
P30-370	20132	TIE	20
P30-371	4137-32	PIPE CLAMP	20
P30-372	6013-18	SCREW	20
P30-373	23447 GR1	COMMUTATOR	20
P30-374	6954-7	SCREW	20
P30-375	441-754	STUD	20
P30-376	1333-32	WASHER	20
P30-377	786-294	SPRING	20
P30-378	49513-3	NUT	20
P30-379	45818-15	EYE BOLT	20
P30-380	16110-23	HASP	20
P30-381	17188-23	ROLL PIN	20
P30-382	30804-6	STRAP	20
P30-383	40539-250	BRACKET	20
P30-384	6954-8	SCREW	20
P30-385	17188-39	ROLL PIN	20
P30-386	16111-150	SPRING	20
P30-387	641-47	CLAMP	21
P30-388	52981 GR1	VENTILATOR	21
P30-389	57520-3	CRANK	21
P30-390	3343-29	SCREW	21
P30-391	9098-3GR1	LINK	21
P30-392	14915-3GR1	CRANK	21
P30-393	0387	KEY	21
P30-394	44515-85	CONNECTOR	21
P30-395	20132-1	PLUG	21
P30-396	0820-2	BUSHING	21
P30-397	45688-62	COUPLING	21
P30-398	092-3	BOLT & NUT	21
P30-399	35132-14	ELBOW	21
P30-400		SCREW & WASHER	21
	17708-55	SCREW	
	01273-7	WASHER	
P30-401	38165-77	SPACER	21
P30-402	43209-8	WASHER	21
P30-403	43209-13	WASHER	21
P30-404	5713-29	RING	21
P30-405	504-424	PIN	21
P30-406	17708-9	SCREW	21
P30-407	38165-78	SPACER	21
P30-409	59839-1	FRAME	21
P30-410	17708-54	SCREW	21
P30-411	0213-2	COTTER	21
P30-415	49536-95	BEARING	22
P30-416	29417-3	SEAL	22
P30-417	29839-8	SHAFT	22
P30-418	7670-5	WASHER	22
P30-419	504-99	PIN	22
P30-420	041	COTTER	22
P30-421	626-204	WASHER	22
P30-422	626-200	WASHER	22
P30-423	01115	RING	22
P30-424	57524-3	SHAFT	22
P30-425	626-22	WASHER	22
P30-426	33645-28	SPACER	22
P30-427	35463-9	SPACER	22
P30-428	29417-2	SEAL	22
P30-429	49536-96	BEARING	22

CATALOG SECTION P50
PARTS LIST
Model 9B Direct-Current Electric Switch Lock
Forced Drop

FOR ASSEMBLIES, SEE CATALOG SEC. 50

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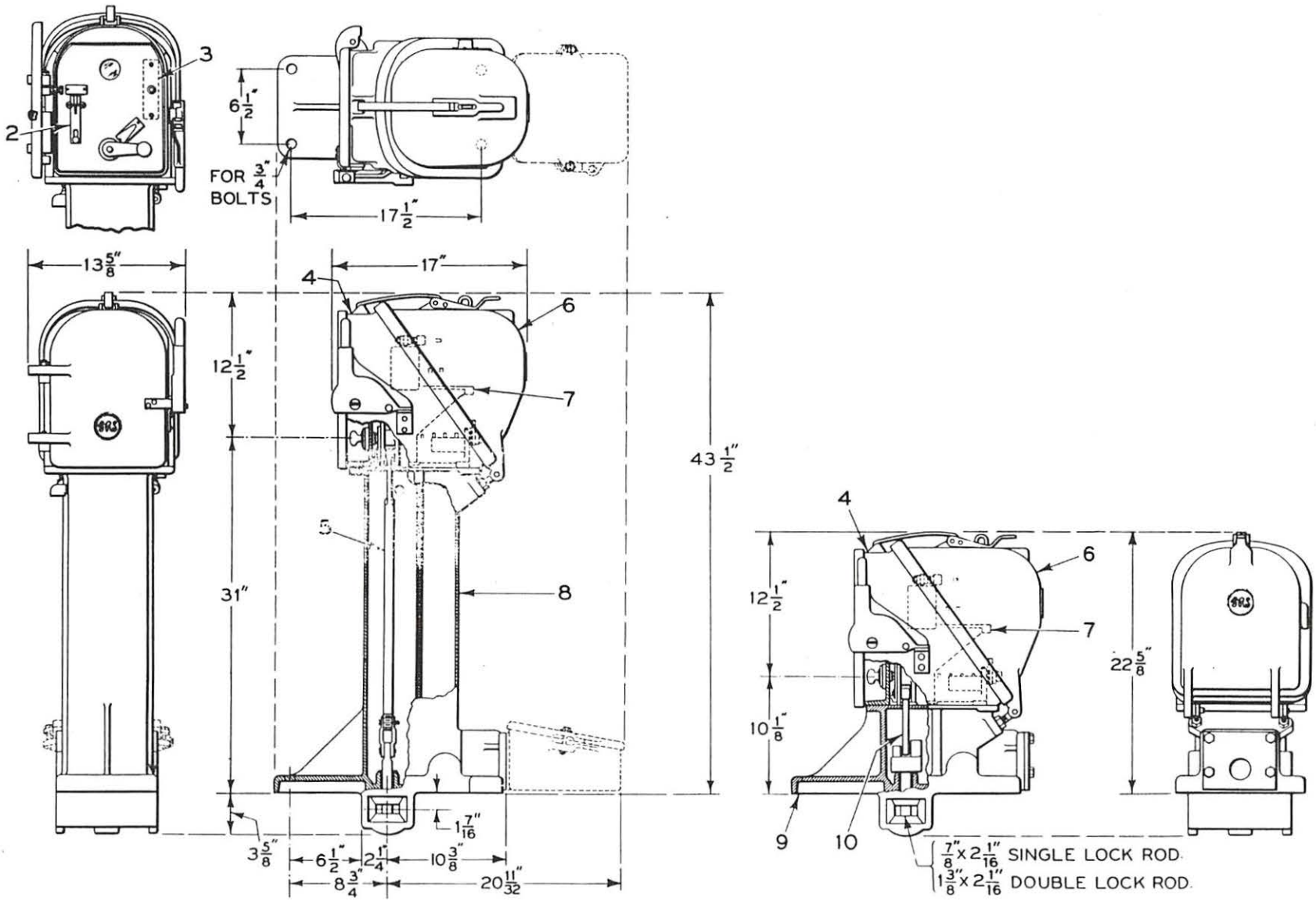


MODEL 9B DIRECT CURRENT
SWITCH LOCKS ELECTRICALLY OPERATED

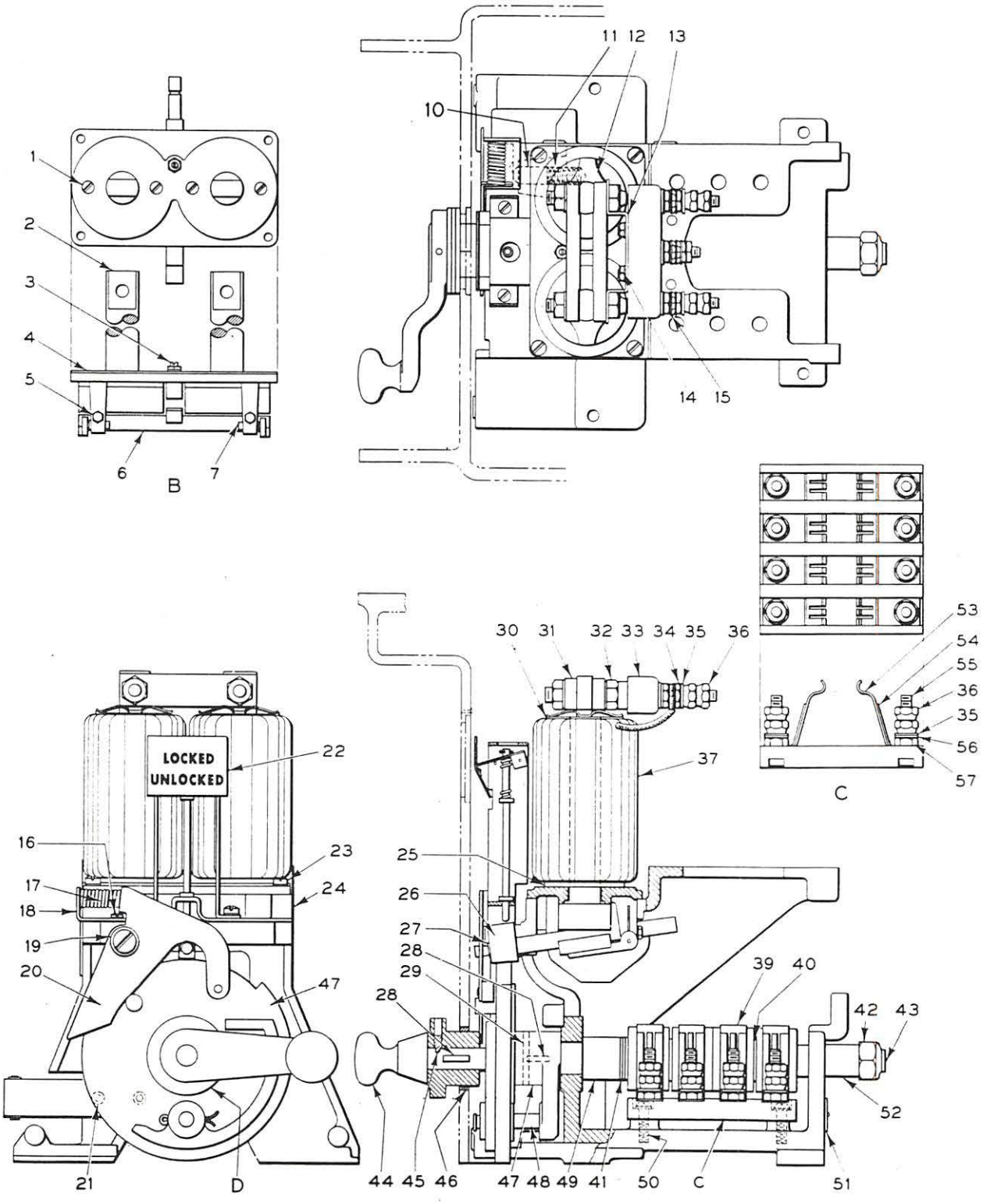
Model 9B switch lock.

Model 9B Switch Lock

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
2	EMERGENCY RELEASE COMPLETE, for references see page 12 . . .	
3	DOOR CIRCUIT CONTROLLER, for references see page 12.	
4	CASE COMPLETE, for references see page 8	
5	ROD COMPLETE, operating, for references see page 8.	
6	COVER COMPLETE, for references see page 8	
7	MECHANISM COMPLETE, for references see page 4	
8	BASE COMPLETE, high, for references see page 16	
9	BASE COMPLETE, low, for references see page 16.	
10	ROD COMPLETE, operating, for references see page 8.	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LOCKED
UNLOCKED
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42 43
52
44 45 46 47 48 49 41 50 C 51

Mechanism.

Mechanism
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	MECHANISM COMPLETE, with banner type indicator. For 8-to 12-volt d-c. operation	P50-179
B	ARMATURE AND CORES COMPLETE	P50-218
C	BOARD COMPLETE	P50-195
D	SHAFT COMPLETE, includes the following Refs. 28, 29, 43, 44, 45 and 47	P50-147
1	SCREW, for fastening support to cores	P50-139
2	CORE, only.	P65-335
3	SCREW, set, stop for armature	P50-170
3A	NUT, for above.	P62-128
3B	WASHER, lock, for above	P62-401
4	SUPPORT, for magnet	P50-183
5	SCREW, for clamping trunnions in place	P50-185
5A	WASHER, lock, for above	P62-334
6	ARMATURE COMPLETE, with locking finger	P50-184
7	TRUNNION, for armature	P50-203
10	PLUNGER, indexing	P85-1353
11	SPRING, indexing	P50-118
12	WASHER, spring, for top of coils	P65-485
13	SUPPORT, for terminal block	P65-716
14	SCREW, for mounting terminal block	P62-216
14A	NUT, for above	P76-129
14B	WASHER, lock, for above	P62-401
15	WASHER, lock, for terminal posts	P85-801
16	SCREW, for mounting bracket Ref. 18	P50-223
16A	WASHER, lock, for above	P62-406
17	SPRING, force-down.	P50-119
18	BRACKET, for spring	P50-261
19	STUD, for force-down lever.	P50-142
19A	WASHER, for above	P85-50
20	LEVER COMPLETE, force-down, includes hub, roller and studs.	P50-257
21	SCREW, for mounting bracket.	P50-127
21A	WASHER, lock, for above	P62-401
22	INDICATOR COMPLETE, locked-unlocked, includes mounting hardware	P50-212
23	SCREW, for mounting armature and cores	P62-215
23A	WASHER, lock, for above	P62-401
24	FRAME	P50-192

Mechanism

Parts List

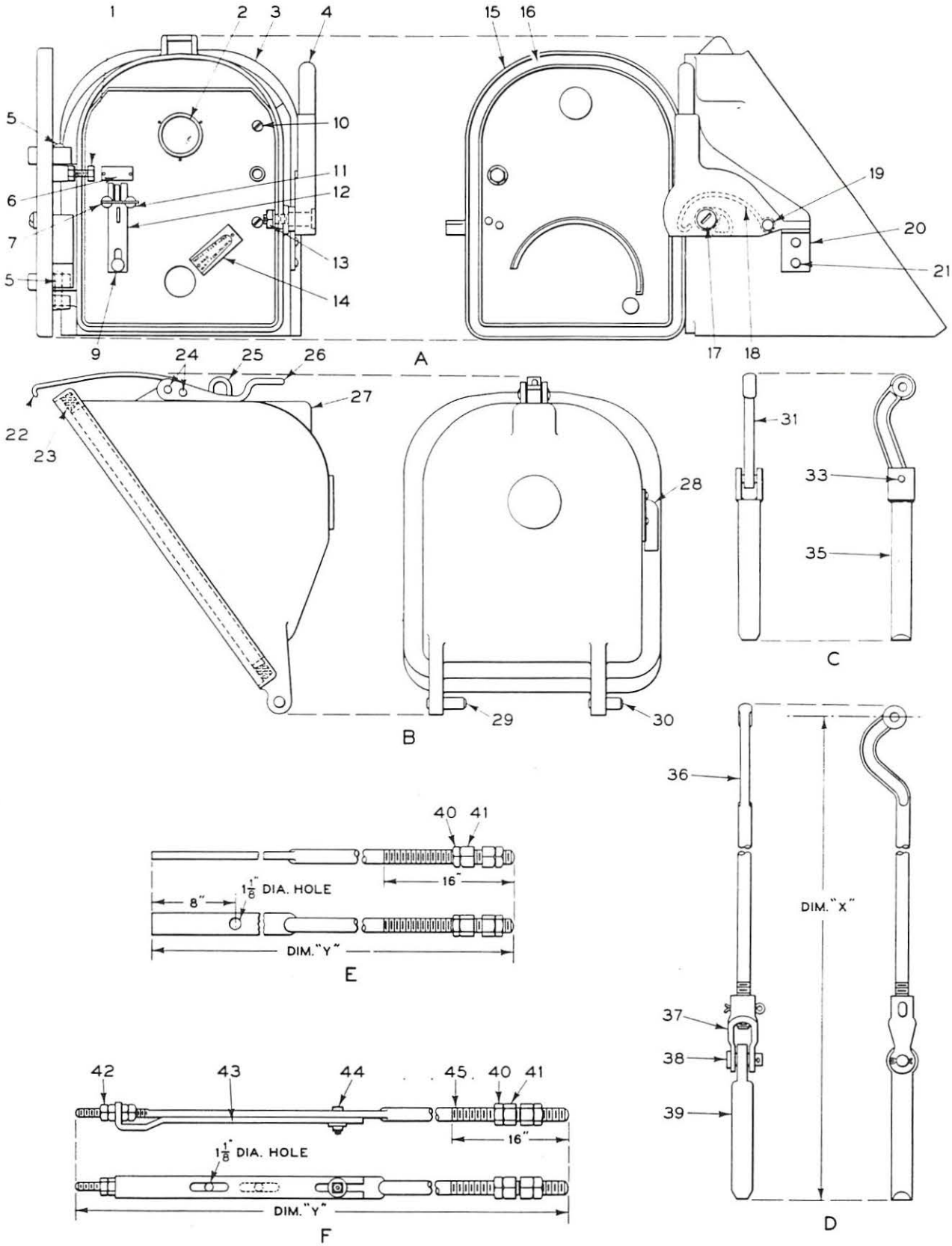
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
25	WASHER, felt, for use under coils	P65-187
26	KEY, locking, for finger.	P50-194
27	RING, retaining, for key	P50-133
28	KEY, for handle and dog	P85-128
29	PIN, for fastening dog to shaft.	P76-116
30	WASHER, fibre, for top of coils	P65-455
31	YOKE, for cores	P50-219
32	SCREW, for fastening yokes to cores	P50-128
32A	NUT, for above	P85-205
32B	WASHER, lock, for above	P65-729
33	TERMINAL BLOCK COMPLETE	P65-598
34	NUT, for terminal posts	P62-333
35	WASHER, for terminal posts	P76-108
36	NUT, for terminal posts	P76-131
37	COIL, for 8-to 12-volt d-c. operation.	P50-189
39	COMMUTATOR	P50-181
40	WASHER, lock, for commutators	P50-182
41	WASHER, for shaft.	P50-737
42	NUT, elastic stop, for shaft.	P50-215
43	SHAFT, only	P50-193
44	HANDLE, for shaft, includes set screw Ref. 45	P50-196
45	SCREW, set, for handle	P50-831
45A	PIN, for handle, for locks of earlier design	P50-161
46	Ring, rubber, for handle	P50-125
47	DOG, with stud, for operating rod.	P50-165
48	PIN, for operating rod.	P50-178
49	BUSHING, shouldered, for shaft.	P50-143
50	SCREW, for mounting board.	P85-1022
50A	WASHER, lock, for above	P81-121
51	NAME PLATE	P50-107
51A	SCREW, drive, for above	P85-795
52	BUSHING, for shaft	P50-138
53	SPRING, contact, long.	P50-155
54	SPRING, contact, short	P50-156
55	SCREW, used as terminal post	P76-100

Mechanism
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
56	WASHER, lock, for terminal posts	P85-801
57	NUT, for terminal posts	P62-333



Model 9B electric lock.

Model 9B Electric Lock
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	CASE COMPLETE, for locks with emergency release	P50-200
A1	As above, except for locks without emergency release	P50-199
B	COVER COMPLETE, rear, includes gasket, hasp and all riveted parts	P50-243
C	ROD COMPLETE, operating, for dwarf locks	P50-209
D	ROD COMPLETE, operating, for high locks with single lock rod. Dimension "X" = 2'-8-3/16"	P50-210
D1	As above, except for high locks with double lock rod. Dimension "X" = 2'-8-7/16"	P50-211
E	LOCK ROD COMPLETE, single, used to lock normal only. Dimension "Y" = 7'-10"	A50-205
E1	As above, except Dimension "Y" = 12'-8"	A50-206
E2	Same as Ref. E, except undrilled. Dimension "Y" = 7'-10"	A50-207
E3	Same as Ref. E2, except undrilled. Dimension "Y" = 12'-8"	A50-208
F	LOCK ROD COMPLETE, double adjustable, used to lock normal and reverse, adjustable for 3-1/2" to 5-1/2" throw. Dimension "Y" - 8'-4"	A50-200
F1	As above, except Dimension "Y" = 13'-0"	A50-201
1	SCREW, for operating circuit breaker	P50-130
1A	NUT, for above	P50-123
2	GLASS	P50-122
2A	BEZEL, for above	P50-237
2B	SCREW, for above	P85-795
3	CASE, only, for locks with emergency release	P50-202
3A	As above, except for locks without emergency release	P50-201
4	HANDLE, latch, for door	P50-167
5	Rivet, top and bottom, hinge for door	P50-114
6	NAME PLATE	P50-109
6A	SCREW, for above	P50-244
7	STRAP, for emergency release	P50-258
9	STUD, for emergency release	P50-144
10	SCREW, for mounting circuit breaker	P50-131
10A	NUT, for above	P85-11
10B	WASHER, lock, for above	P81-121
11	STUD, for emergency release	P50-146
12	PLATE COMPLETE, for emergency release	P50-251
13	NUT, for stud Ref. 17	P50-238

Model 9B Electric Lock
Parts List

Order by catalog number and name shown in bold type

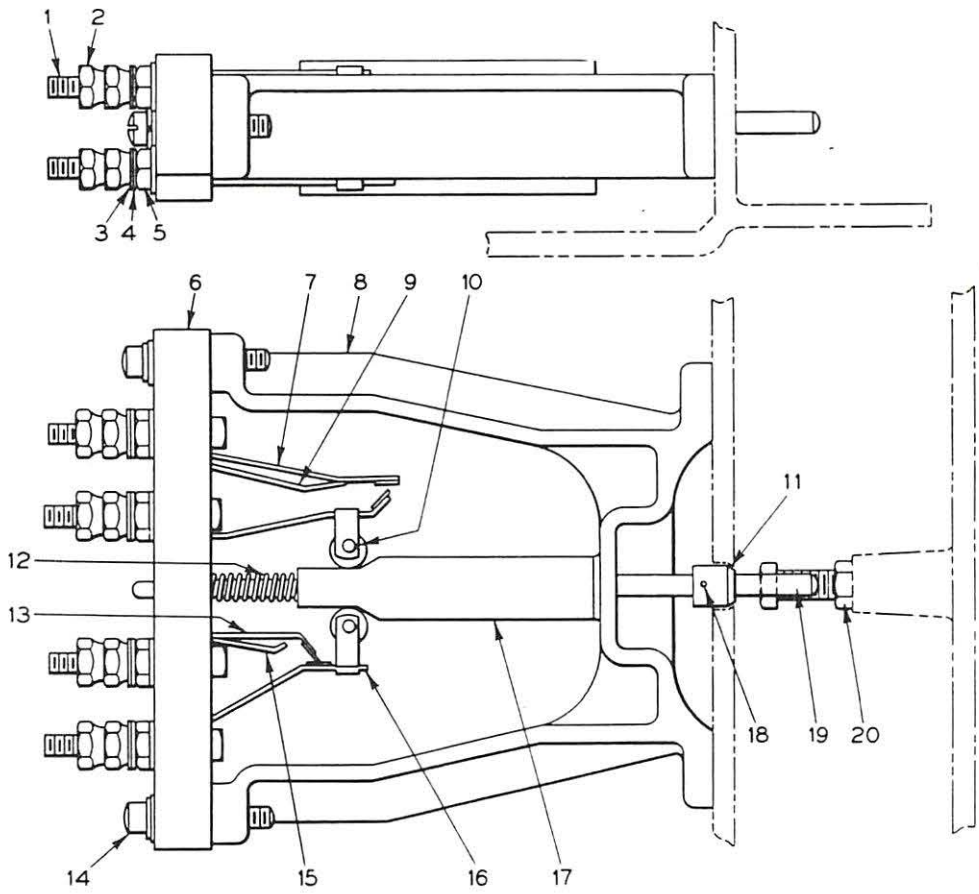
REF.	NAME	CATALOG NUMBER
13A	WASHER, lock, for above	P50-101
14	PLATE, instruction	P50-108
14A	SCREW, drive, for above	P50-244
15	DOOR COMPLETE	P50-168
16	GASKET, 3'-5" long, for door. Specify number of feet	P76-132
17	STUD, for handle	P50-113
18	STRAP, for handle	P50-187
19	RIVET, for strap	P50-220
20	CLIP, stop for handle	P50-247
21	RIVET, for clip	P50-105
22	STRAP, for rear door	P50-188
23	GASKET, 4'-4" long, for cover. Specify number of feet	P5-405
24	RIVET, for strap	P81-116
25	STAPLE, for hasp	P81-141
26	HASP, for rear door	P50-158
27	COVER, only	P50-234
28	HOOD, for cover	P50-205
28A	PLATE, for above	P50-206
28B	SCREEN, for above	P50-207
28C	SCREW, for above	P50-249
29	STUD, drilled, for door	P50-115
30	STUD, undrilled, for door	P50-116
31	ROD, only	P50-173
33	PIN, roll, for fastening rod to plunger	P50-832
35	PLUNGER	P50-175
36	ROD, only	P50-174
37	JAW, for operating rod	P50-140
38	PIN, for fastening jaw to plunger	P50-141
39	PLUNGER, only	P50-176
40	NUT, for lock rods.	P91-123
41	NUT, for lock rods.	P91-122
42	NUT, for adjustable lock rod	P91-220
43	PLATE, adjusting	P50-197
44	BOLT & NUT, for adjustable lock rod.	P50-102

Model 9B Electric Lock

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
44A	WASHER, for above	P50-100
45	ROD, only. Dimension "Y" = 8'-4"	P50-216
45A	As above, except dimension "Y" = 13'-0".	P50-217



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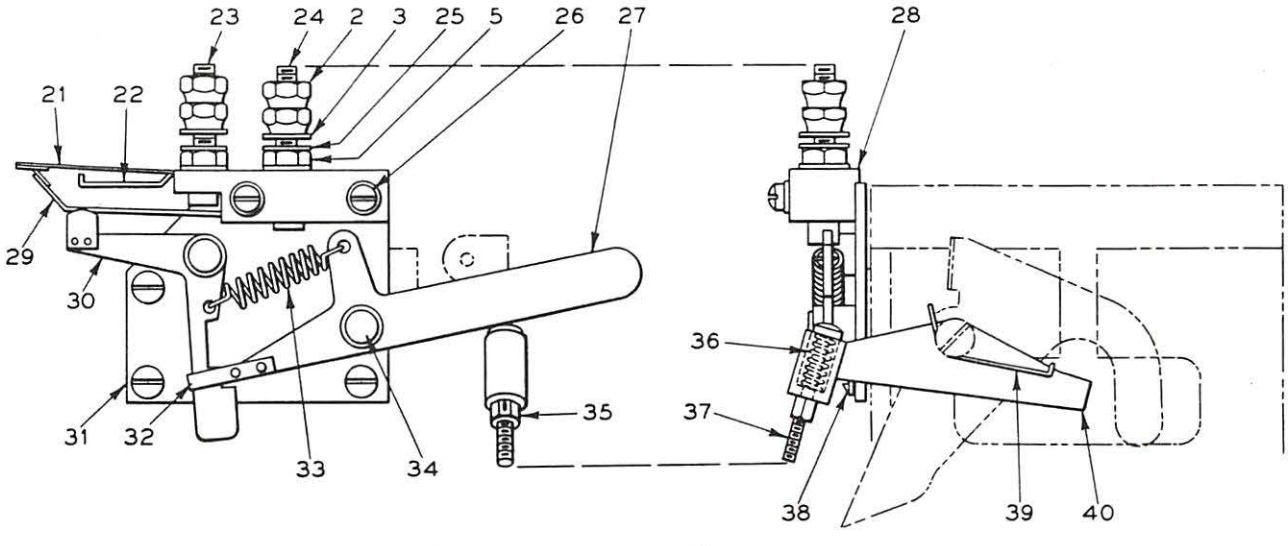


B

Door circuit controller and emergency release.

Door Circuit Controller and Emergency Release
Parts List

Order by catalog number and name shown in bold type

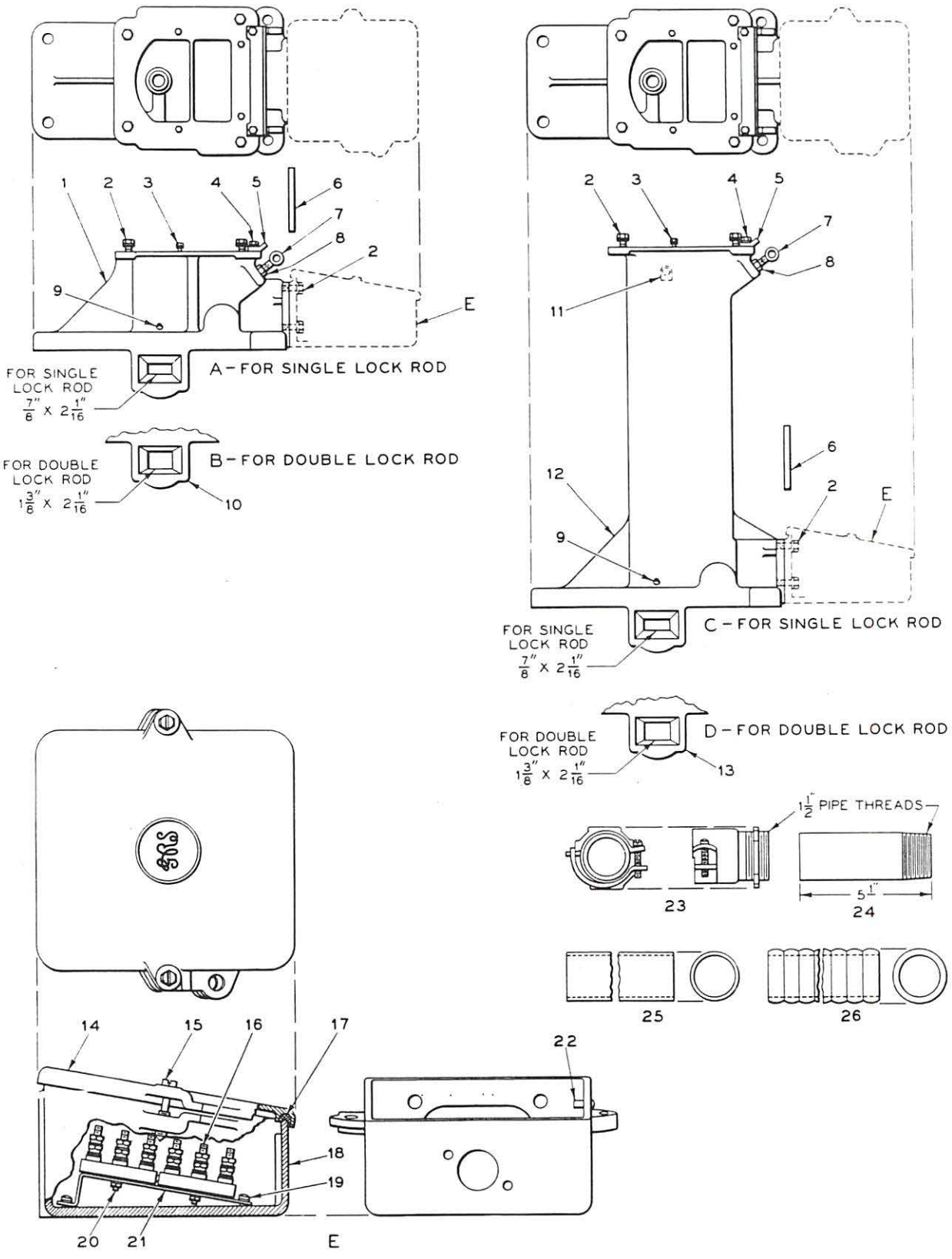
REF.	NAME	CATALOG NUMBER
A	DOOR CIRCUIT CONTROLLER COMPLETE, with two normally open and two normally closed contacts. Operates to normal by closing door and to reverse by return spring	P50-171
B	EMERGENCY RELEASE MECHANISM COMPLETE, attaches to mechanism frame	P50-255
1	SCREW, used as terminal post	P50-106
2	NUT, for terminal posts	P76-131
3	WASHER, for terminal posts	P76-108
4	WASHER, lock, for terminal posts	P81-206
5	NUT, for terminal posts	P62-333
6	TERMINAL BLOCK, only	P50-172
7	CONTACT COMPLETE	P50-149
8	FRAME, only	P50-235
9	STOP, for contact Ref. 7	P50-227
10	CONTACT COMPLETE, with roller	P50-150
11	COLLAR, for plunger	P50-110
12	SPRING, for plunger	P50-121
13	CONTACT COMPLETE	P50-152
14	SCREW, for fastening terminal block to frame	P50-224
14A	WASHER, for above	P50-157
14B	WASHER, lock, for above	P62-148
15	STOP, for contact Ref. 13	P50-226
16	CONTACT COMPLETE, with roller	P50-151
17	PLUNGER COMPLETE	P50-254
18	PIN, for collar	P50-166
19	SCREW, for adjustment	P50-130
20	NUT, for screw Ref. 19	P50-123
21	CONTACT COMPLETE	P50-154
22	STOP, for contact Ref. 21	P50-250
23	SCREW, used as terminal post	P76-100
24	SCREW, used as terminal post	P65-102
25	WASHER, lock, for terminal posts	P85-804
26	SCREW, for mounting block to plate	P50-148
26A	WASHER, lock, for above	P62-401
27	LEVER COMPLETE, release	P50-256
28	BLOCK, only	P50-180
29	CONTACT COMPLETE	P50-153

Door Circuit Controller and Emergency Release
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
30	LATCH COMPLETE	P50-248
31	PLATE, for supporting latch and lever	P50-204
32	CLIP, for latch	P50-208
32A	PIN, for above	P65-171
33	SPRING, for latch	P50-126
34	STUD, for release lever	P50-145
35	NUT, elastic stop, for stud	P85-441
36	SPRING, for stud	P50-120
37	STUD, for release lever	P50-164
38	SCREW, for mounting release	P50-253
38A	WASHER, lock, for above	P62-401
39	SPRING, for arm	P50-124
40	ARM COMPLETE	P50-252

Memoranda



Bases and junction box.

Bases and Junction Box
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	BASE COMPLETE, for dwarf locks, has opening for single lock rod . .	P50-229
B	BASE COMPLETE, for dwarf locks, has opening for double lock rod. .	P50-230
C	BASE COMPLETE, for high locks, has opening for single lock rod . .	P50-231
D	BASE COMPLETE, for high locks, has opening for double lock rod . .	P50-232
E	JUNCTION BOX COMPLETE, has two terminal blocks with twelve No. 14-24 posts in each side, has opening for 1-1/2" conduit fitting .	A50-220
E1	As above, except has opening for Raco entrance seal	A50-221
1	BASE, only, has opening for single lock rod	P50-239
2	SCREW, for fastening lock to base also for fastening junction box to base	P50-129
2A	WASHER, lock, for above.	P50-101
3	SCREW, for mounting mechanism.	P50-236
3A	WASHER, lock, for above.	P62-148
4	SCREW, for bar Ref. 5	P50-136
4A	WASHER, lock, for above.	P50-103
5	BAR, only	P50-169
6	PLATE, for use when junction box is not used	P50-135
6A	As above, except has hole for Raco entrance seal	P50-134
7	EYEBOLT, for cover	P50-214
8	NUT, for eyebolt	P50-137
9	FITTING, grease	P85-378
10	BASE, only, has opening for double lock rod.	P50-240
11	VENTILATOR, for pedestal	P50-245
12	BASE, only, has opening for single lock rod	P50-241
13	BASE, only, has opening, for double lock rod	P50-242
14	COVER, only	P50-233
15	SCREW, for cover.	P50-246
16	TERMINAL BLOCK COMPLETE, six way (two required)	A3-127
17	GASKET, 35-3/4" long. Specify number of feet	P85-460
18	BOX, only, has opening for 1-1/2 conduit fitting.	P50-191
18A	BOX, only, has opening for Raco entrance seal	P50-190
19	SCREW, for mounting strap	P50-225
19A	WASHER, lock, for above	P81-121
20	SCREW, for mounting terminal blocks	P76-114
20A	NUT, for above	P76-129
20B	WASHER, lock, for above.	P50-404

Bases and Junction Box

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
21	STRAP, for supporting terminal blocks	P50-213
22	STUD, for box	P50-117
23	COUPLING, 1-1/2" pipe thread, for 1-1/2" flexible conduit	A85-866
24	NIPPLE, pipe, 1-1/2" pipe thread, for 1-7/8" I.D. rubber conduit . .	A85-867
25	CONDUIT, 1-7/8" I.D., solid rubber, length 3'	A85-520
26	CONDUIT, 1-1/2" flexible, length 3'	A85-868

CATALOG SECTION P50
PARTS LIST
Model 10 Direct-Current Electric Switch Lock
Forced Drop

FOR ASSEMBLIES, SEE CATALOG SEC. 50

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Conduit and Fittings 40
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Supports 40

GENERAL RAILWAY SIGNAL
A UNIT OF GENERAL SIGNAL
PO BOX 600
ROCHESTER NEW YORK 14692

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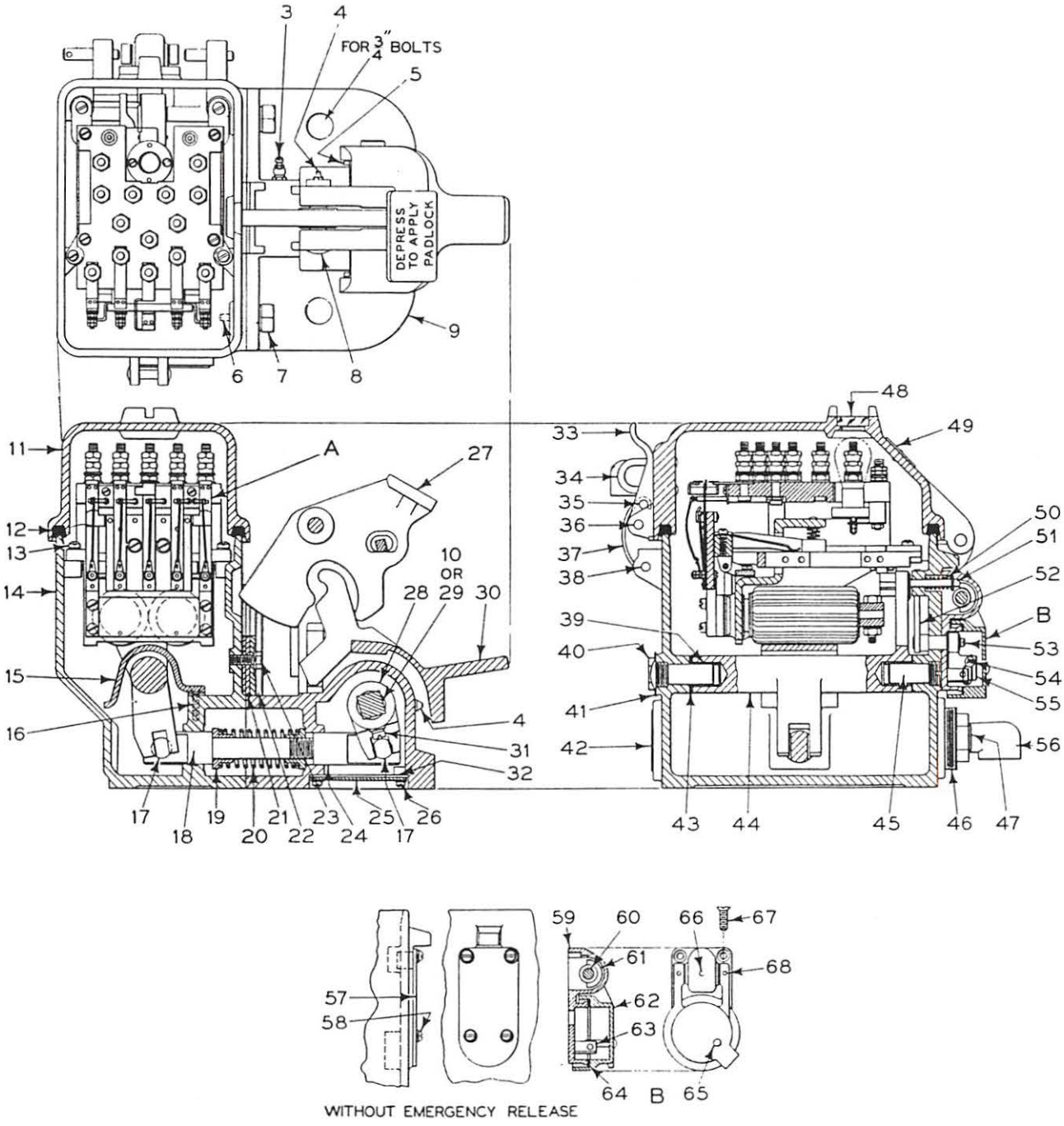


Model 10 electric switch lock.

Model 10 Electric Switch Lock

Parts List
8-12 Volt D.C. Operation

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	MECHANISM COMPLETE, for references see page 36	
B	COVER COMPLETE, for emergency release	P50-562
3	FITTING, grease	P87-101
4	FITTING, grease	P81-140
5	BUSHING, for latch	P50-435
6	PIN, taper, for fastening stand to case	P50-414
7	SCREW, for fastening stand to case	P50-403
7A	WASHER, lock, for above	P50-101
8	PIN, hinge, for latch	P50-415
9	STAND, for switch lock	P50-545
11	COVER, only	P50-543
12	GASKET, 2'-6" long, for cover. Specify number of feet	P76-133
13	SCREW, for mounting mechanism.	P50-474
13A	WASHER, lock, for above	P85-801
14	CASE, with two studs for cover	P50-542
15	GUARD, for cam.	P50-567
16	SCREW, for mounting guard.	P50-475
17	PIN, for operating cam and crank Ref. 28	P50-555
18	PLUNGER	P50-551
19	BUSHING, for each end of spring	P50-417
20	SPRING, for plunger.	P50-418
21	SHIM, two required	P50-468
22	GUIDE, for handle	P50-447
23	SCREW, for guide and shims	P50-402
23A	WASHER, lock, for above	P76-106
24	TANG, for switch lock	P50-556
25	PLATE, for bottom of switch lock	P50-462
26	SCREW, for plate Ref. 25	P62-214
26A	WASHER, lock, for above.	P62-401
27	LATCH, for switch lock	P50-502
28	CRANK, for switch lock	P50-550
29	SHAFT, for switch lock	P50-553
30	PEDAL, for switch lock	P50-546

Model 10 Electric Switch Lock

Parts List

Order by catalog number and name shown in bold type

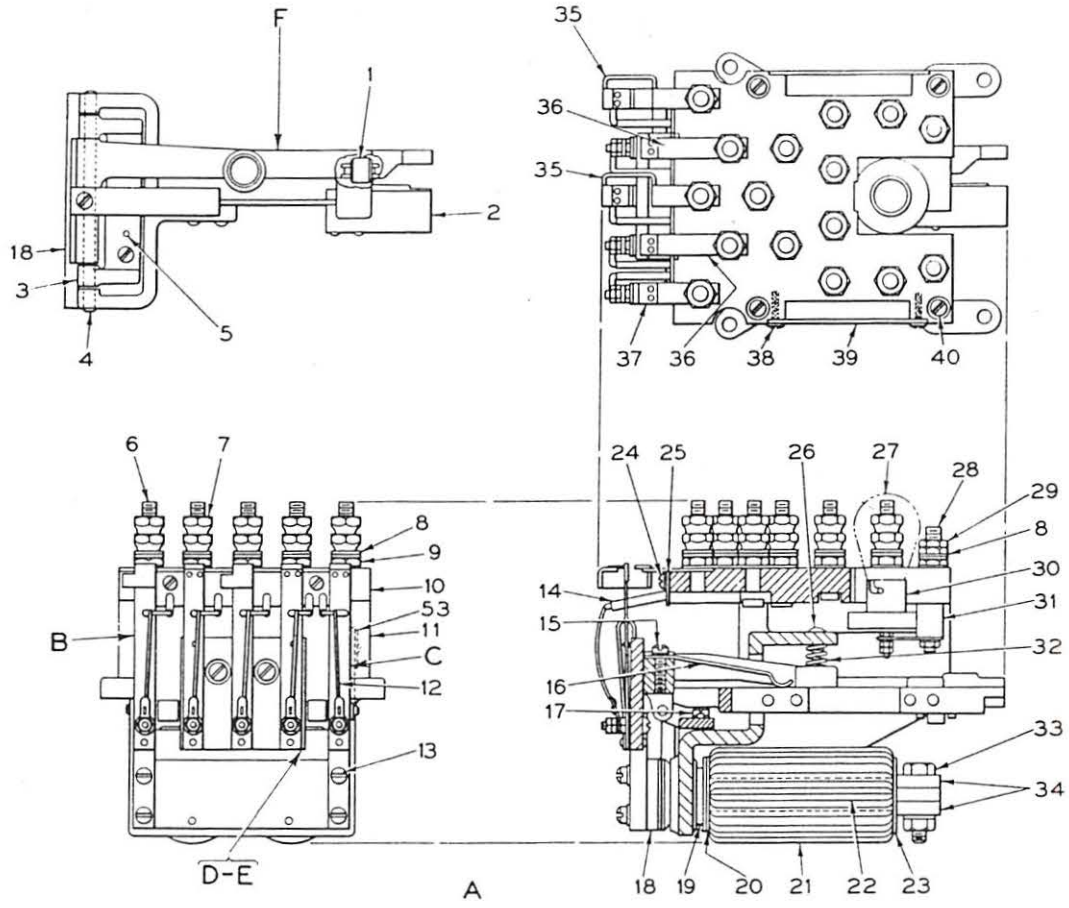
REF.	NAME	CATALOG NUMBER
31	SCREW, for crank	P50-465
31A	WASHER, lock, for above	P76-106
32	GASKET, for plate Ref. 25	P50-437
33	HASP, for cover	P85-310
34	STAPLE, for hasp	P50-441
35	PIN, for strap	P50-416
36	PIN, for hasp	P50-433
37	STRAP, for hasp	P85-362
38	PIN, for strap	P50-434
39	BUSHING, for trunnion	P50-430
40	TRUNNION, for operating cam	P50-461
41	WASHER, for trunnion	P50-412
42	PLUG, 1-1/2"	P85-879
43	WASHER, shim, for use between operating cam and case	P50-423
44	CAM COMPLETE, operating, with bushings Ref. 39 for switch lock	P50-573
45	TRUNNION, for operating cam	P50-460
46	BUSHING, reducing, 1-1/2" to 1/2"	P50-469
47	PLUG, 1/2"	P50-507
48	GLASS, safety, for cover	P50-421
49	NAME PLATE	P50-407
49A	SCREW, for above	P85-795
50	SPRING, for plunger	P50-420
51	PLUNGER, for cam	P50-548
52	CAM, for emergency release	P50-565
53	SCREW, for handle	P62-436
53A	WASHER, lock, for above	P62-402
53B	WASHER, for above	P85-201
54	SEAL, car, for handle	P62-299
55	HANDLE, for emergency release	P50-566
56	VENTILATOR, for case	P81-204
57	PLATE, used when emergency release is omitted	P50-463
58	SCREW, for plate Ref. 57	P50-431
58A	WASHER, lock, for above	P85-390
59	PLATE, for cover	P50-552
60	PIN, for cam	P50-411
61	CAM, for emergency release	P50-563

Model 10 Electric Switch Lock

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
62	COVER, for emergency release	P50-544
63	STUD, for emergency release	P50-564
64	GASKET, for cover	P50-436
65	STUD, for emergency release	P50-410
66	PIN, roll, for fastening cam to shaft	P62-238
67	SCREW, for mounting cover of emergency release	P50-431
68	PIN, roll, for shaft.	P50-443



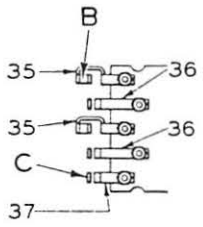


FIG.V

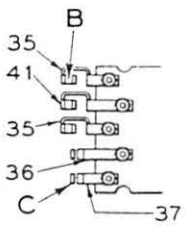


FIG.W

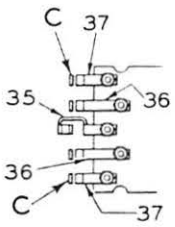
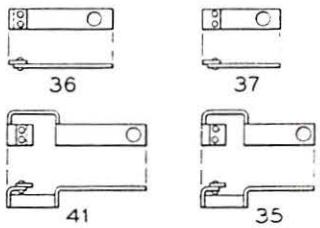
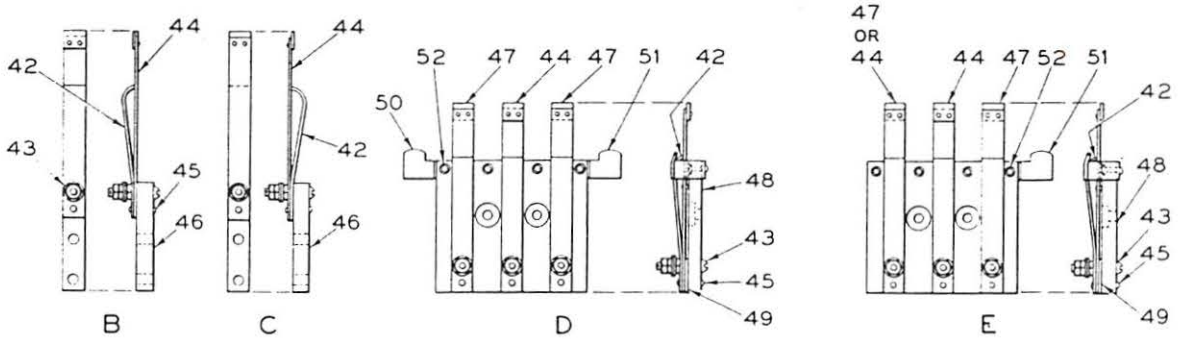


FIG. X





Mechanism.

Mechanism

Parts List

8-12 Volt D.C. Operation

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	MECHANISM COMPLETE, has the following contact combination as shown in Fig. V on opposite page: 1F and 1B electrically operated 1F and 2B mechanically operated	P50-539
A1	As above, except has the following contact combination as shown in Fig. W on opposite page: 1F and 1B electrically operated 2F and 1B mechanically operated	P50-541
A2	Same as Ref. A, except has the following contact combination as shown in Fig. X on opposite page: 2B electrically operated 1F and 2B mechanically operated	P50-540
B	FINGER COMPLETE, front	P50-569
C	FINGER COMPLETE, back	P50-568
D	BLOCK COMPLETE, with front contact in space 3 and back contacts in spaces 2 and 4, for Ref. A2	P50-559
E	BLOCK COMPLETE, with back contacts in spaces 2 and 4 and front contact in space 3, for Ref. A	P50-561
E1	As above, except with front contacts in spaces 2 and 3 and back contact in space 4, for Ref. A1	P50-560
F	ARM COMPLETE, with roller and pin	P50-509
1	ROLLER, for arm	P50-464
1A	PIN, roll, for above	P62-238
2	LOCK DOG, with armature, for switch lock	P50-557
3	BRACKET, for arm and lock dog	P50-549
4	PIN, 4" long, for bracket, undrilled	P50-446
4A	As above, except 4-1/4" long, with two holes	P50-445
5	PIN, taper, for bracket	P50-413
6	SCREW, used as terminal post	P65-102
7	NUT, for terminal posts	P76-131
8	WASHER, for terminal posts	P76-108
9	NUT, for terminal posts	P62-333
10	BLOCK, only, for contacts	P50-547
11	FRAME, for switch lock	P50-558
12	CONNECTOR COMPLETE, for fingers	P50-470
13	SCREW, for fastening fingers to armature	P62-216
13A	WASHER, lock, for above	P62-401
14	TUBING, No. 12, 3' long	P50-574
15	SCREW, for mounting spring	P62-215
15A	WASHER, lock, for above	P62-401

Mechanism

Parts List

Order by catalog number and name shown in bold type

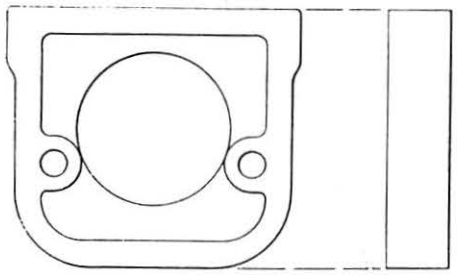
REF.	NAME	CATALOG NUMBER
16	SPRING, hold-down, for locking dog	P50-440
17	SCREW, for fastening bracket to frame	P62-214
17A	WASHER, lock, for above	P62-401
18	ARMATURE, for switch lock	P50-453
19	NUT, for cores	P65-287
20	WASHER, felt, for coils	P65-189
21	COIL, 50 ohms	P50-457
22	CORE, for coils	P65-334
23	WASHER, fibre, for coils	P62-293
24	SCREW, for plate Ref. 25	P50-424
24A	WASHER, lock, for above	P62-406
25	PLATE, for tubing	P50-455
26	STUD, for spring Ref. 32	P50-409
27	LAMP, incandescent (S-8 or S-11), see Section 46 for ordering information	
28	SCREW, terminal for lamp	P50-106
29	NUT, for terminal post	P65-585
30	RECEPTACLE COMPLETE, for lamp	P50-501
31	SPACER, for lamp receptacle	P50-493
32	SPRING, for arm	P50-419
33	SCREW, for cores	P65-272
33A	NUT, for above	P65-142
33B	WASHER, lock, for above	P85-801
34	YOKE, for cores	P50-471
35	SUPPORT COMPLETE	P50-495
36	SUPPORT COMPLETE, 1-7/8" long as shown	P50-496
37	SUPPORT COMPLETE, 1-3/8" long as shown	P50-497
38	SCREW, for plate Ref. 39	P50-473
39	PLATE, for protecting wires	P50-456
40	SCREW, for mounting block Ref. 10	P62-217
40A	WASHER, lock, for above	P62-401
41	SUPPORT COMPLETE	P50-498
42	STOP, for fingers	P50-504
43	SCREW, for fingers	P50-425
43A	NUT, for above	P65-498
43B	WASHER, for above	P50-422

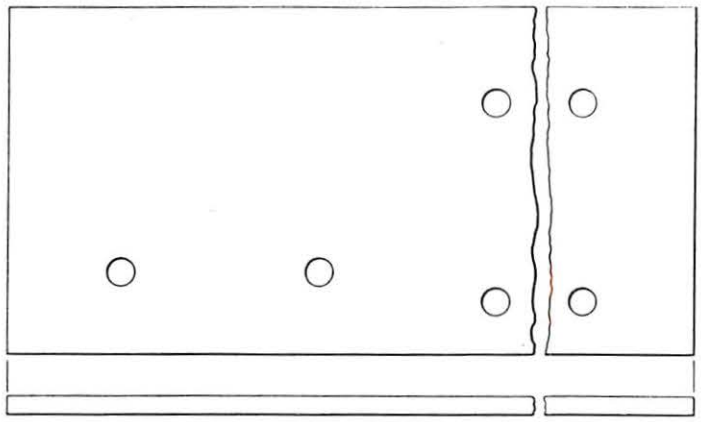
Mechanism

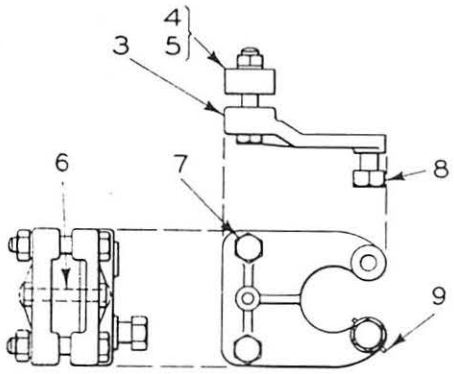
Parts List

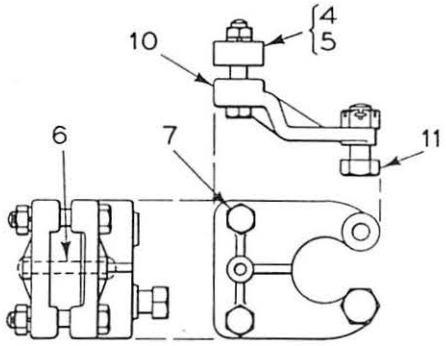
Order by catalog number and name shown in bold type

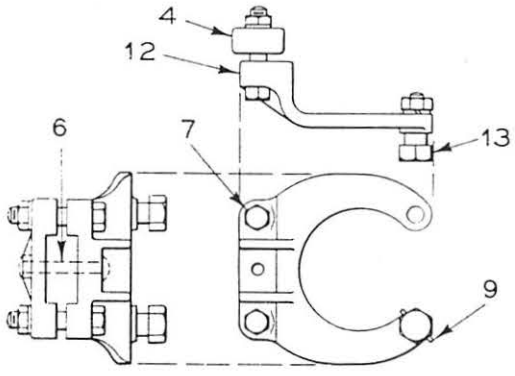
REF.	NAME	CATALOG NUMBER
44	CONTACT COMPLETE, front, for blocks	P50-439
45	PIN, for fastening contact and stop to plate	P50-444
46	PLATE, for contact and stop	P50-503
47	CONTACT COMPLETE, back, for blocks Refs. D and E	P50-438
48	BLOCK, for contacts and stops	P50-458
49	PLATE, spacer, for contacts and stops	P50-454
50	STOP, left hand	P50-506
51	STOP, right hand	P50-505
52	PIN, for fastening stops to block	P50-577
53	NAME PLATE	P50-575
53A	SCREW, for above	P85-795

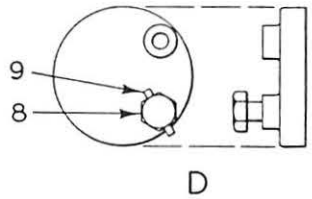


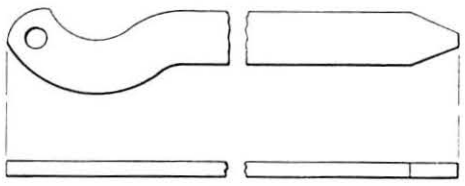


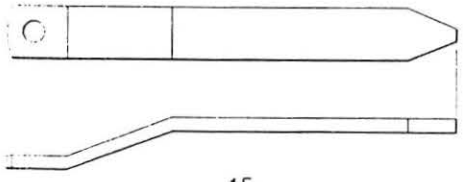


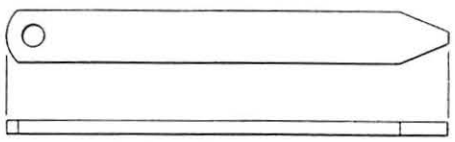


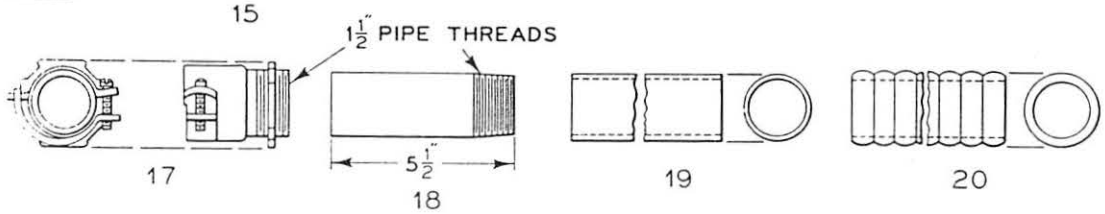












Detail parts.

Model 10 Electric Switch Lock
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	SUPPORT COMPLETE for Ramapo (Racor) 109 or 110 switch stand	P50-510
A1	As above, except for Bethlehem 51A (New Century) switch stand	P50-511
B	SUPPORT COMPLETE for Bethlehem 53A switch stand	P50-512
B1	As above, except for Rapro; Pettibone Mulliken #4 or 5; Cleveland Odenkirk and Ramapo Ajax 26E switch stands	P50-513
C	SUPPORT, for Ramapo Ajax 36D and 36H switch stands	P50-514
D	SUPPORT COMPLETE for Ramapo (Racor) E1419 switch stand	P50-516
1	SUB-BASE, for use under single lock when applied to GRS Model 9 switch machine	P50-570
2	PLATE, for use under lock when using Bethlehem 53A switch stand	P50-476
2A	As above, except for Ramapo (Racor) E1419	P50-477
2B	Same as Ref. 2, except for Ramapo Ajax 36D or 36H	P50-448
2C	Same as Ref. 2, except for Ramapo Ajax 26E	P50-450
2D	Same as Ref. 2, except for Pettibone Mulliken #4	P50-449
3	SUPPORT, only, for Ref. A	P50-520
3A	As above, except for Ref. A1	P50-530
4	CLAMP, only, for Refs. A1, B1 and C	P50-538
5	CLAMP, only, for Refs. A and B	P50-537
6	RIVET	P50-494
7	BOLT, and NUT	P50-400
7A	WASHER, lock, for above	P81-104
8	BOLT, for Refs. A and D	P50-426
9	PIN, for bolts Refs. 8 and 13	P50-432
10	SUPPORT, only, for Ref. B	P50-531
10A	As above, except for Ref. B1	P50-532
11	BOLT, for Ref. B	P50-427
11A	NUT, for above	P50-466
12	SUPPORT, only, for Ref. C	P50-533
13	BOLT, for Ref. C	P50-429
13A	NUT, for above	P50-499
13B	WASHER, lock, for above	P81-104
14	ROD, latch, straight, for Ramapo Ajax 36D and 36H switch stands	P50-479
15	ROD, latch, offset, for GRS Model 9 Switch Machine	P50-486
15A	Same as Ref. 15, except for Bethlehem 51A (New Century) switch stand	P50-487
15B	Same as Ref. 15, except for Pettibone Mulliken #4 switch stand	P50-483
15C	Same as Ref. 15, except for Ramapo (Racor) E1419 switch stand.	P50-491

Model 10 Electric Switch Lock
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
15D	Same as Ref. 15, except for Pettibone Mulliken #5 switch stand	P50-489
15E	Same as Ref. 15, except for Cleveland Odenkirk switch stand	P50-490
15F	Same as Ref. 15, except for Rapro and Ramapo (Racor) 109 or 110 switch stands	P50-488
15G	Same as Ref. 15, except for Ramapo Ajax 26E switch stand	P50-492
16	ROD, latch, straight, for Bethlehem 53A switch stand.	P50-478
17	COUPLING, 1-1/2" pipe thread, for 1-1/2" flexible conduit.	A85-866
18	NIPPLE, pipe, 1-1/2" pipe thread, for 1-7/8" I. D. rubber conduit . .	A85-867
19	CONDUIT, 1-7/8" I. D., solid rubber, length 3'	A85-520
20	CONDUIT, 1-1/2" flexible, length 3'	A85-868

CATALOG SECTION P50
PARTS LIST
Spring Switch Lock

FOR ASSEMBLIES, SEE CATALOG SEC. 50

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GRS
GENERAL RAILWAY SIGNAL
A UNIT OF GENERAL SIGNAL
ROCHESTER NEW YORK 14692

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Target Staffs, Lock Rod, Detector Bars, Saddle Plates and Cranks

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
15	SCREW, for cover plate	P50-809
16	SCREW, for fastening pedestal to switch machine	P50-761
16A	WASHER, lock, for above	P50-700
17	BOLT, for fastening coupling Ref. 14 to staff	P50-720
17A	NUT, for above	P85-413
17B	WASHER, lock, for above	P81-122
18	PLATE, cover	P50-724
19	GASKET, 2'-10-1/2" long, for plate. Specify number of feet	P50-778
20	STEP COMPLETE, for pedestal	P50-745
21	PEDESTAL, only	P50-793
22	SCREW, for fastening pedestal to switch machine	P50-730
22A	WASHER, lock, for above	P50-700
23	PLATE, only	P50-759
24	BOLT & NUT, for fastening plate to staff	P50-765
24A	WASHER, lock, for above	P76-106
24B	WASHER, for above.	P50-743
25	LAMP TIP, only	P50-827
26	BOLT & NUT, for fastening lamp tip to staff	P50-762
26A	WASHER, lock, for above	P81-205

CATALOG SECTION P50
PARTS LIST
Spring Switch Lock

FOR ASSEMBLIES, SEE CATALOG SEC. 50

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GENERAL RAILWAY SIGNAL
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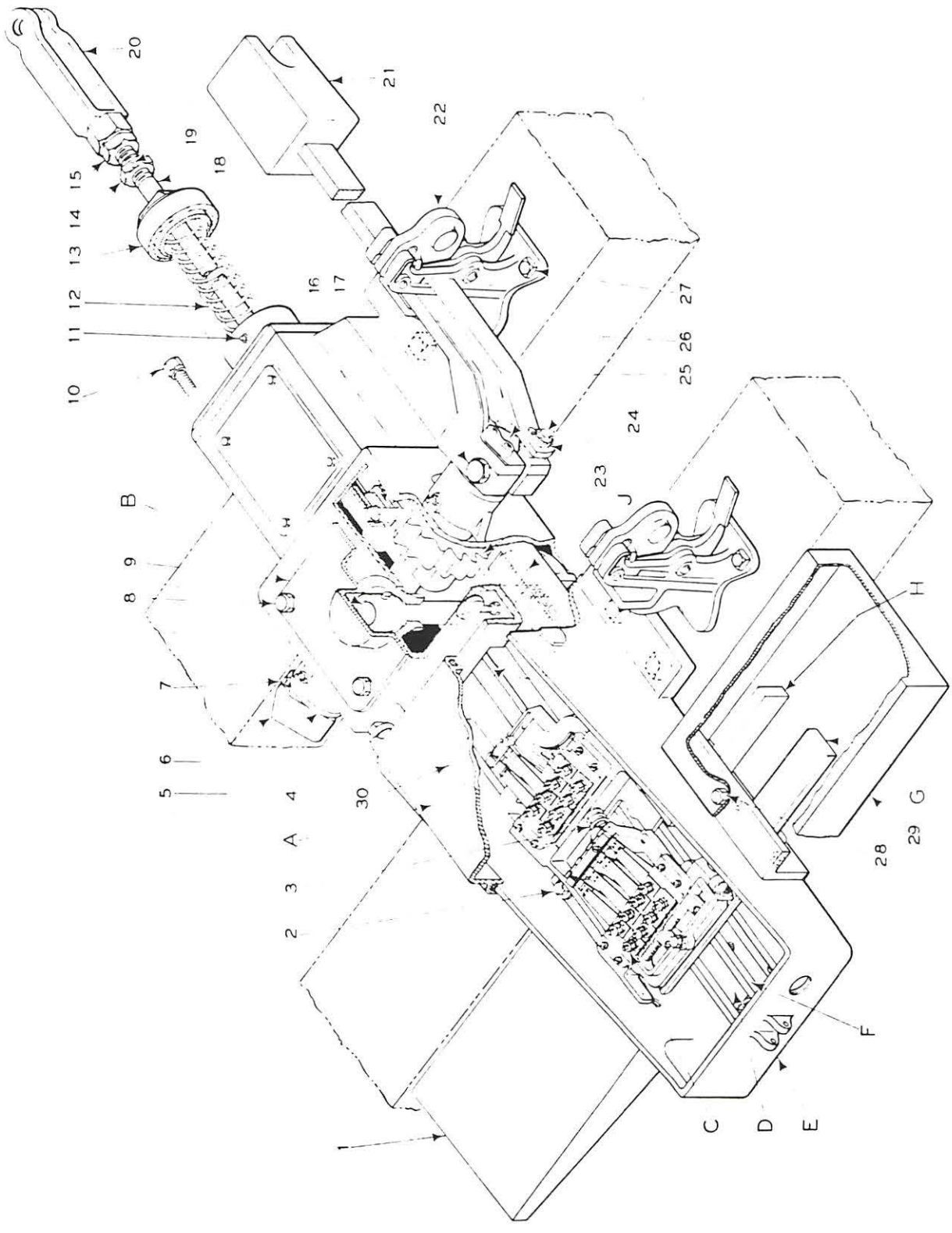


Spring switch lock.

Spring Switch Lock

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	COVER COMPLETE, for references see page 58	
B	SHAFT, for order references see page 58	
C	CONTROLLER COMPLETE, for references see page 60	
D	LATCH BAR COMPLETE, for references see page 58	
E	CASE COMPLETE, for references see page 56	
F	PLUNGER COMPLETE	P50-813
G	DETECTOR BAR COMPLETE, for references see page 66	
H	LOCK ROD COMPLETE, for references see page 66	
J	RACK COMPLETE, with rollers	P50-781
1	GUARD, for track side of machine	P50-802
2	SCREW, for mounting controller	P85-261
2A	WASHER, lock, for above	P81-122
3	SPRING, for latch bar	P50-714
4	CRANK, for escapement	P50-794
5	BUSHING, for shaft Ref. 26	P50-823
6	COLLAR, for shaft Ref. 26	P50-750
7	BOLT & NUT, for fastening collar Ref. 6 to shaft Ref. 26	P50-764
7A	WASHER, lock, for above	P81-122
8	SCREW, for fastening plate Ref. 9 to case	P50-726
8A	WASHER, lock for above	P26-156
9	CAP, for covering opening when target staff is not used	P50-751
10	SCREW, for fastening housing Ref. 13 to case	P50-730
10A	WASHER, lock, for above	P50-700
11	FITTING, grease, for spring	P85-378
12	SPRING COMPLETE, encased	P50-740
13	HOUSING COMPLETE, for spring	P50-742
14	NUT, drilled for pin Ref. 19	P50-702
15	NUT, for locking jaw	P91-144
16	PIN, for fastening plunger to spring	P50-708
16A	RING, retaining for spring	P50-723
17	BOLT, for fastening arm to shaft	P50-716
17A	NUT, for above	P50-713
17B	WASHER, lock, for above	P85-105
18	ROD, plunger	P50-741
19	PIN, roll, for nut Ref. 14	P50-735
20	JAW, for rod	P50-757

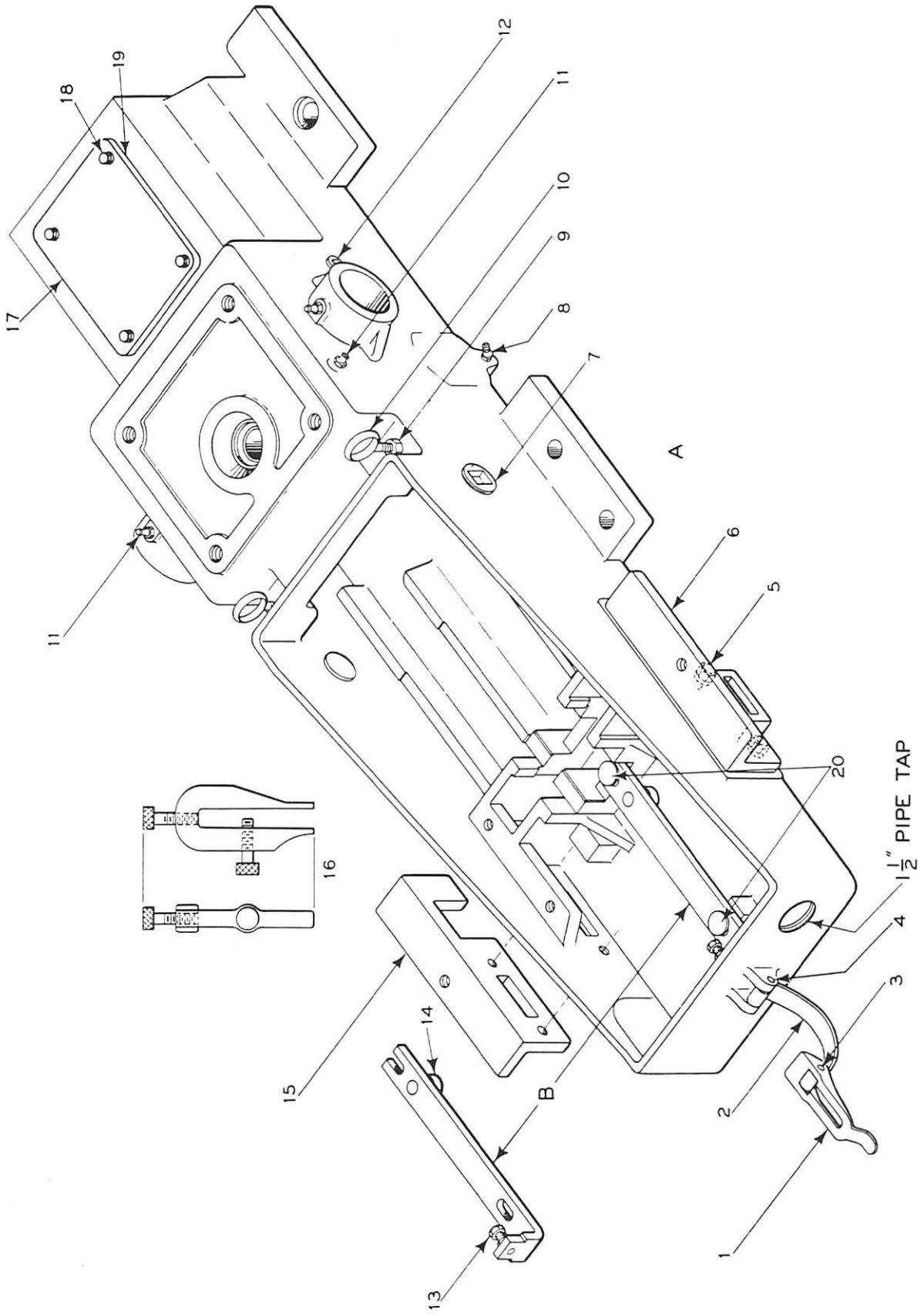
Spring Switch Lock

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
21	ARM, hand-throw lever	P50-806
22	LATCH STAND COMPLETE, for hand-throw lever	A87-191
23	SECTOR, for operating rack	P50-746
24	NUT, for stud Ref. 25	P50-466
25	STUD, for lever	P50-777
26	SHAFT, for sector	P50-822
27	SCREW, lag, for mounting latch stands	P3-103
28	SCREW, for mounting guards	P50-721
29	GUARD, for field side of machine	P50-801
30	NAME PLATE	P50-704
30A	SCREW, for above	P50-830

Memoranda

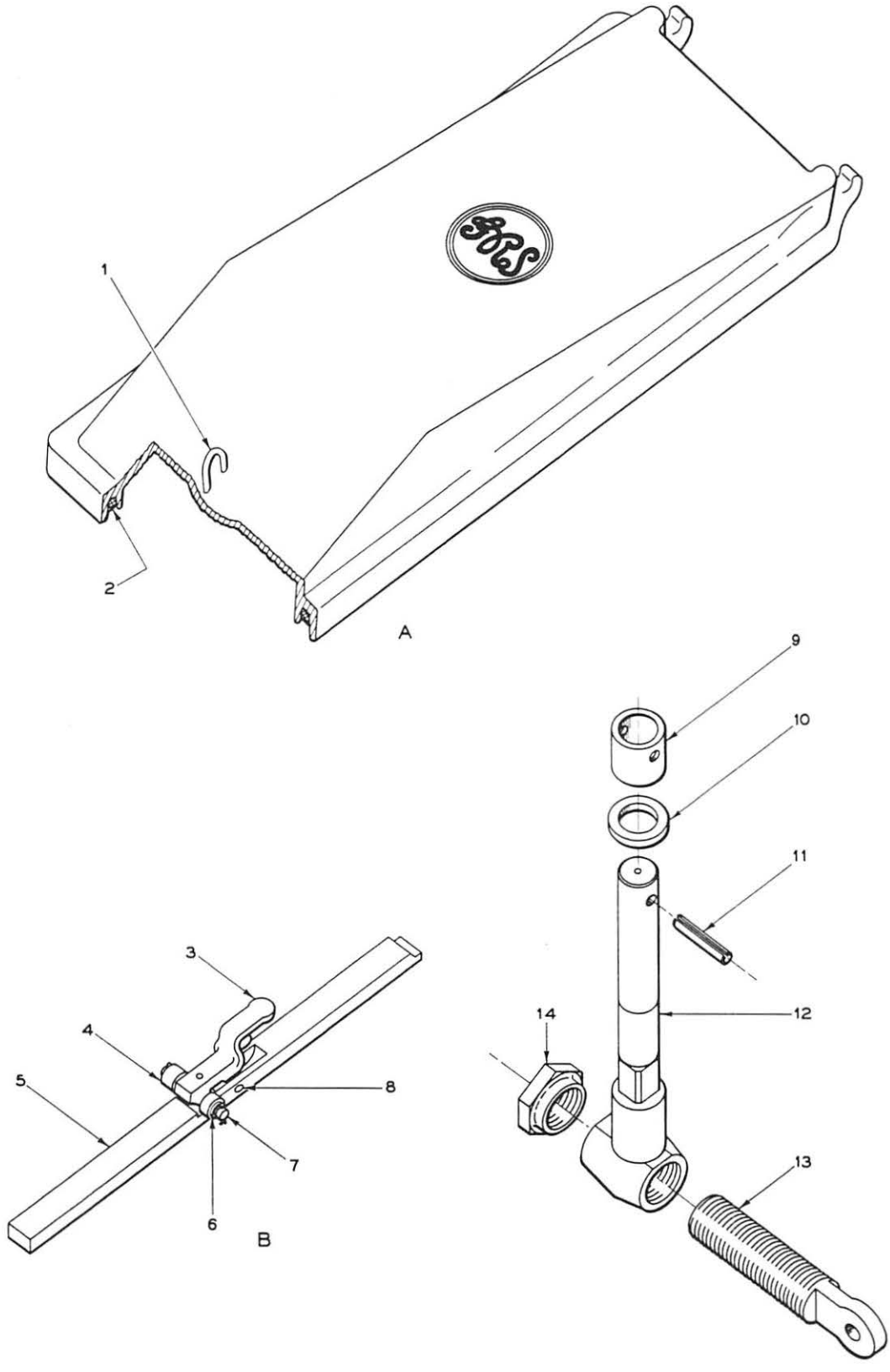


Case.

Case
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	CASE COMPLETE	P50-789
B	BAR COMPLETE, for controller	P50-795
1	HASP, for cover	P81-165
2	STRAP, for hasp	P50-754
3	RIVET, for fastening hasp to strap	P81-116
4	RIVET, for fastening strap to case	P50-703
5	SCREW, for fastening plates Ref. 6 and 15 to case	P50-403
5A	WASHER, lock, for above	P50-401
6	PLATE, for use on right-hand side of switch machine, has opening for detector bar and lock rod	P50-783
7	PLUG, pipe, for each side of case	P50-739
8	FITTING, grease, for lower shaft bushing	P50-753
9	NUT, for eyebolt	P50-717
10	EYEBOLT, for cover	P50-758
11	FITTING, grease, for bushings and target staff	P85-378
12	PLUG, pipe, for case	P85-127
13	SCREW, for bar	P50-722
13A	NUT, for above	P85-455
14	ROLLER, for bar Ref. B	P50-747
14A	STUD, for above	P50-706
14B	WASHER, for above	P50-719
15	PLATE, for use on left-hand side of switch machine, has openings for detector bar and lock rod	P50-784
16	GAUGE, for checking point detection	P50-756
17	PLATE, cover	P50-725
18	SCREW, for plate	P50-701
18A	WASHER, for above	P76-106
19	GASKET, for plate	P26-117
20	STUD, for bar Ref. B	P50-731



Spring switch lock-detail parts.

CATALOG SECTION P50
PARTS LIST
Spring Switch Lock

FOR ASSEMBLIES, SEE CATALOG SEC. 50

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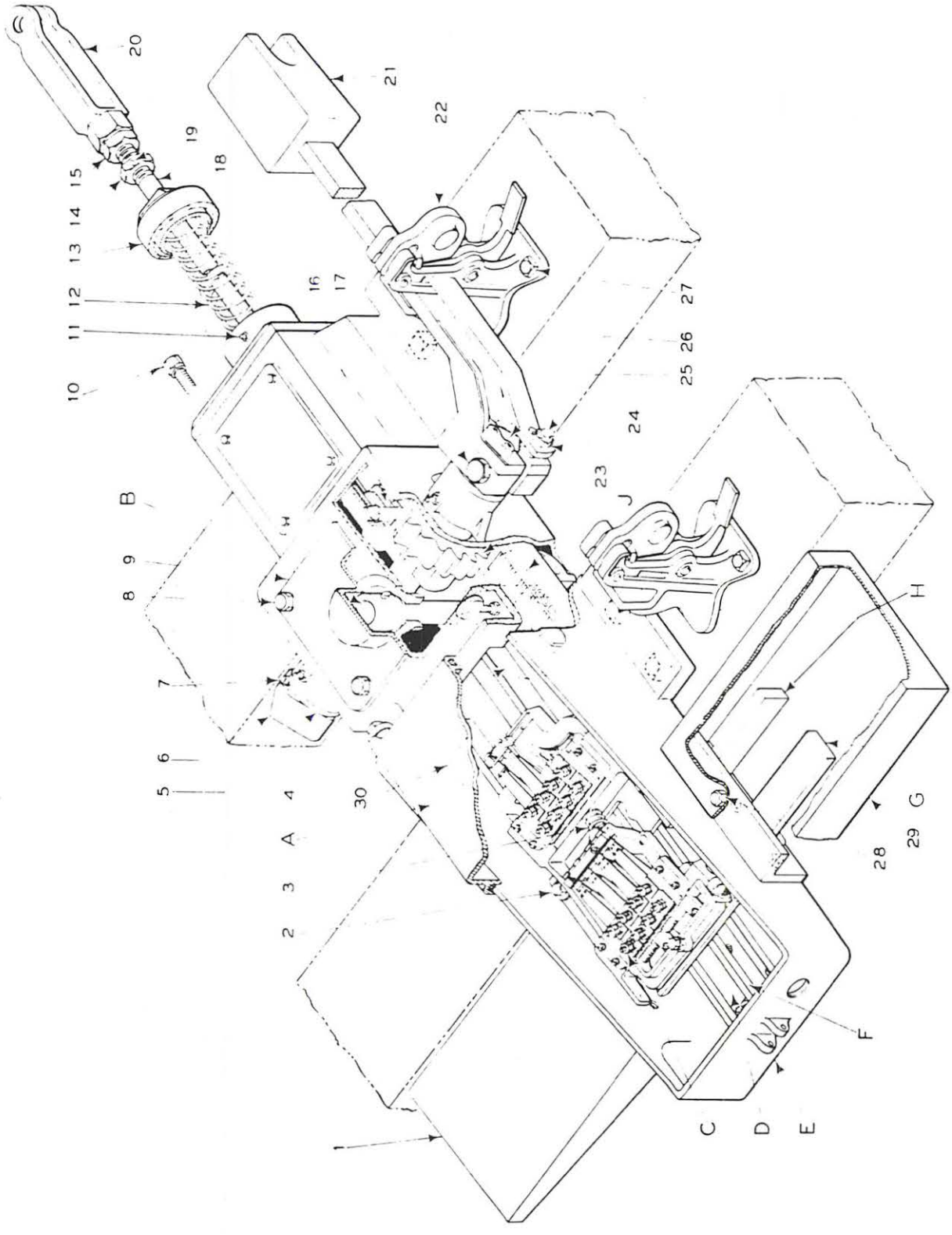


Spring switch lock.

Spring Switch Lock

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	COVER COMPLETE, for references see page 58	
B	SHAFT, for order references see page 58	
C	CONTROLLER COMPLETE, for references see page 60	
D	LATCH BAR COMPLETE, for references see page 58	
E	CASE COMPLETE, for references see page 56	
F	PLUNGER COMPLETE	P50-813
G	DETECTOR BAR COMPLETE, for references see page 66	
H	LOCK ROD COMPLETE, for references see page 66	
J	RACK COMPLETE, with rollers	P50-781
1	GUARD, for track side of machine	P50-802
2	SCREW, for mounting controller	P85-261
2A	WASHER, lock, for above	P81-122
3	SPRING, for latch bar	P50-714
4	CRANK, for escapement	P50-794
5	BUSHING, for shaft Ref. 26	P50-823
6	COLLAR, for shaft Ref. 26	P50-750
7	BOLT & NUT, for fastening collar Ref. 6 to shaft Ref. 26	P50-764
7A	WASHER, lock, for above	P81-122
8	SCREW, for fastening plate Ref. 9 to case	P50-726
8A	WASHER, lock for above	P26-156
9	CAP, for covering opening when target staff is not used	P50-751
10	SCREW, for fastening housing Ref. 13 to case	P50-730
10A	WASHER, lock, for above	P50-700
11	FITTING, grease, for spring	P85-378
12	SPRING COMPLETE, encased	P50-740
13	HOUSING COMPLETE, for spring	P50-742
14	NUT, drilled for pin Ref. 19	P50-702
15	NUT, for locking jaw	P91-144
16	PIN, for fastening plunger to spring	P50-708
16A	RING, retaining for spring	P50-723
17	BOLT, for fastening arm to shaft	P50-716
17A	NUT, for above	P50-713
17B	WASHER, lock, for above	P85-105
18	ROD, plunger	P50-741
19	PIN, roll, for nut Ref. 14	P50-735
20	JAW, for rod	P50-757

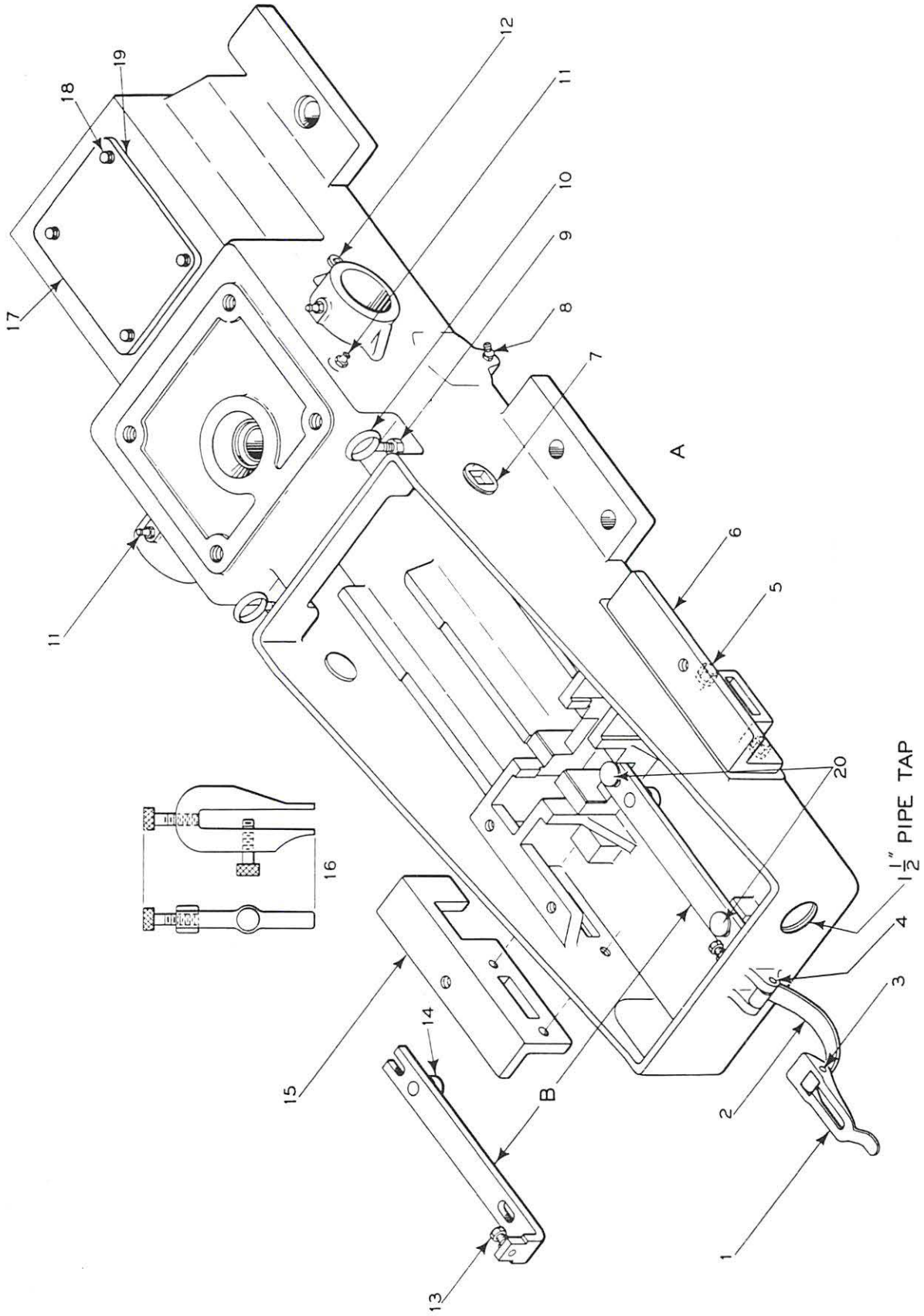
Spring Switch Lock

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
21	ARM, hand-throw lever	P50-806
22	LATCH STAND COMPLETE, for hand-throw lever	A87-191
23	SECTOR, for operating rack	P50-746
24	NUT, for stud Ref. 25	P50-466
25	STUD, for lever	P50-777
26	SHAFT, for sector	P50-822
27	SCREW, lag, for mounting latch stands	P3-103
28	SCREW, for mounting guards	P50-721
29	GUARD, for field side of machine	P50-801
30	NAME PLATE	P50-704
30A	SCREW, for above	P50-830

Memoranda

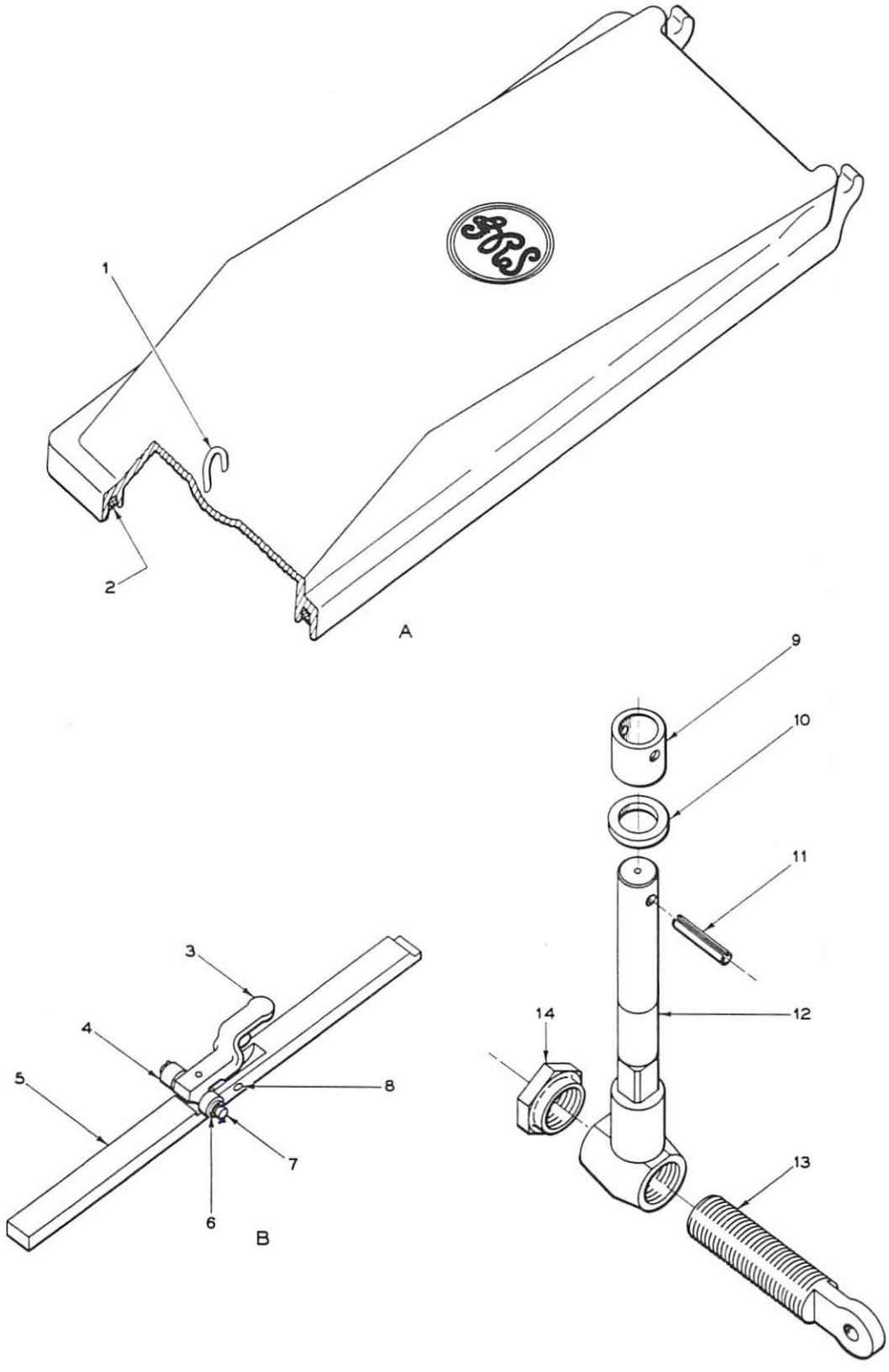


Case.

Case
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	CASE COMPLETE	P50-789
B	BAR COMPLETE, for controller	P50-795
1	HASP, for cover	P81-165
2	STRAP, for hasp	P50-754
3	RIVET, for fastening hasp to strap	P81-116
4	RIVET, for fastening strap to case	P50-703
5	SCREW, for fastening plates Ref. 6 and 15 to case	P50-403
5A	WASHER, lock, for above	P50-401
6	PLATE, for use on right-hand side of switch machine, has opening for detector bar and lock rod	P50-783
7	PLUG, pipe, for each side of case	P50-739
8	FITTING, grease, for lower shaft bushing	P50-753
9	NUT, for eyebolt	P50-717
10	EYEBOLT, for cover	P50-758
11	FITTING, grease, for bushings and target staff	P85-378
12	PLUG, pipe, for case	P85-127
13	SCREW, for bar	P50-722
13A	NUT, for above	P85-455
14	ROLLER, for bar Ref. B	P50-747
14A	STUD, for above	P50-706
14B	WASHER, for above	P50-719
15	PLATE, for use on left-hand side of switch machine, has openings for detector bar and lock rod	P50-784
16	GAUGE, for checking point detection	P50-756
17	PLATE, cover	P50-725
18	SCREW, for plate	P50-701
18A	WASHER, for above	P76-106
19	GASKET, for plate	P26-117
20	STUD, for bar Ref. B	P50-731

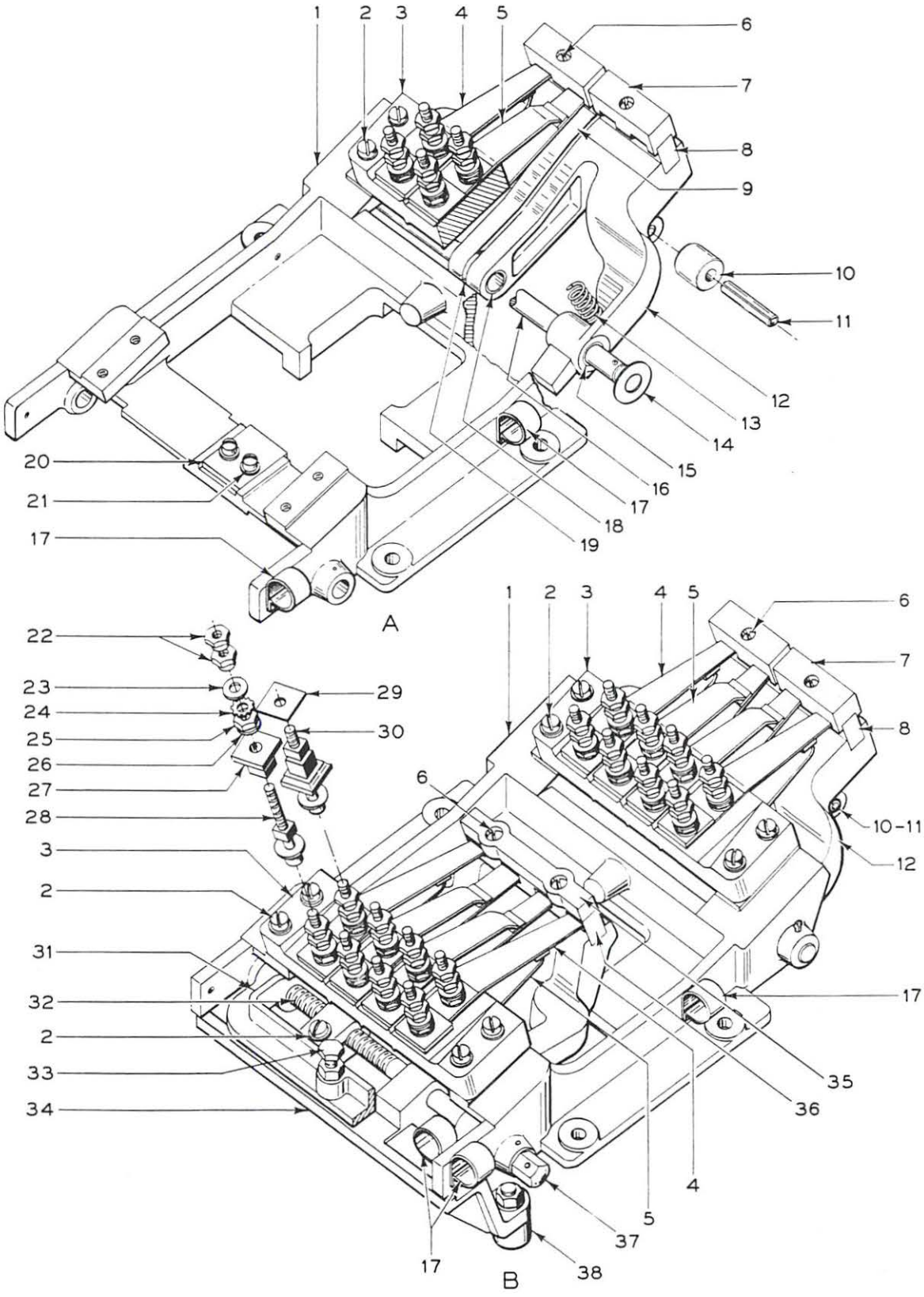


Spring switch lock-detail parts.

Spring Switch Lock
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	COVER COMPLETE, for spring switch lock	P50-788
B	LATCH BAR COMPLETE	P50-812
1	STAPLE, for cover	P81-141
2	GASKET, 6'-0" long, for cover. Specify number of feet	P85-457
3	LATCH, for bar	P50-814
4	ROLLER, for bar	P50-748
5	BAR, only, for bar Ref. B	P50-819
6	WASHER, for rollers	P50-727
7	PIN, for rollers	P50-707
8	PIN, for fastening latch to bar	P50-744
9	COLLAR, for shaft Ref. 12	P50-705
10	WASHER, for use under collar Ref. 9	P50-787
11	PIN, roll, for fastening collar Ref. 9 to shaft Ref. 12	P50-732
12	SHAFT, only	P50-786
13	EYEBOLT, for shaft	P50-776
14	NUT, for eyebolt	P50-760



Circuit controllers.

Circuit Controllers
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	CIRCUIT CONTROLLER COMPLETE, for dual-normal detection only, has two contacts made and two open	P50-804
B	CIRCUIT CONTROLLER COMPLETE, for dual-normal and reverse detection, has two normal contacts made and two open, also two reverse contacts made and two open	P50-803
1	FRAME, for controllers	P50-817
2	SCREW, for mounting contact groups	P50-810
2A	WASHER, lock, for above	P81-121
3	BLOCK, insulating, for fingers	P50-770
4	CONTACT SPRING COMPLETE, movable	P50-766
5	CONTACT SPRING COMPLETE	P50-767
6	SCREW, for mounting block Ref. 7	P50-775
6A	WASHER, lock, for above	P50-808
7	BLOCK COMPLETE, upper	P50-829
8	BLOCK COMPLETE, lower	P50-828
9	ROCKER, right hand	P50-816
10	ROLLER, for rocker	P50-749
11	PIN, roll, for roller Ref. 10	P50-734
12	ROCKER, left hand	P50-815
13	SPRING, for rockers	P50-715
14	WASHER	P50-712
15	BUSHING, 1" long	P50-728
16	SHAFT	P50-821
17	CLIP, cable	P3-131
17A	SCREW, for cable clips	P65-208
17B	NUT, for above	P50-709
18	BUSHING, 7/16" long	P50-729
19	WASHER	P50-711
20	PLATE, latch	P50-826
21	SCREW, for latch plate	P50-811
21A	WASHER, lock, for above	P81-121
22	NUT, for terminal posts	P76-131
23	WASHER, for terminal posts	P76-108
24	WASHER, lock, for terminal posts	P85-804
25	NUT, for terminal posts	P65-585
26	WASHER, for terminal posts	P50-774
27	BUSHING, insulating, for terminal posts	P50-773

Circuit Controllers
Parts List

Order by catalog number and name shown in bold type

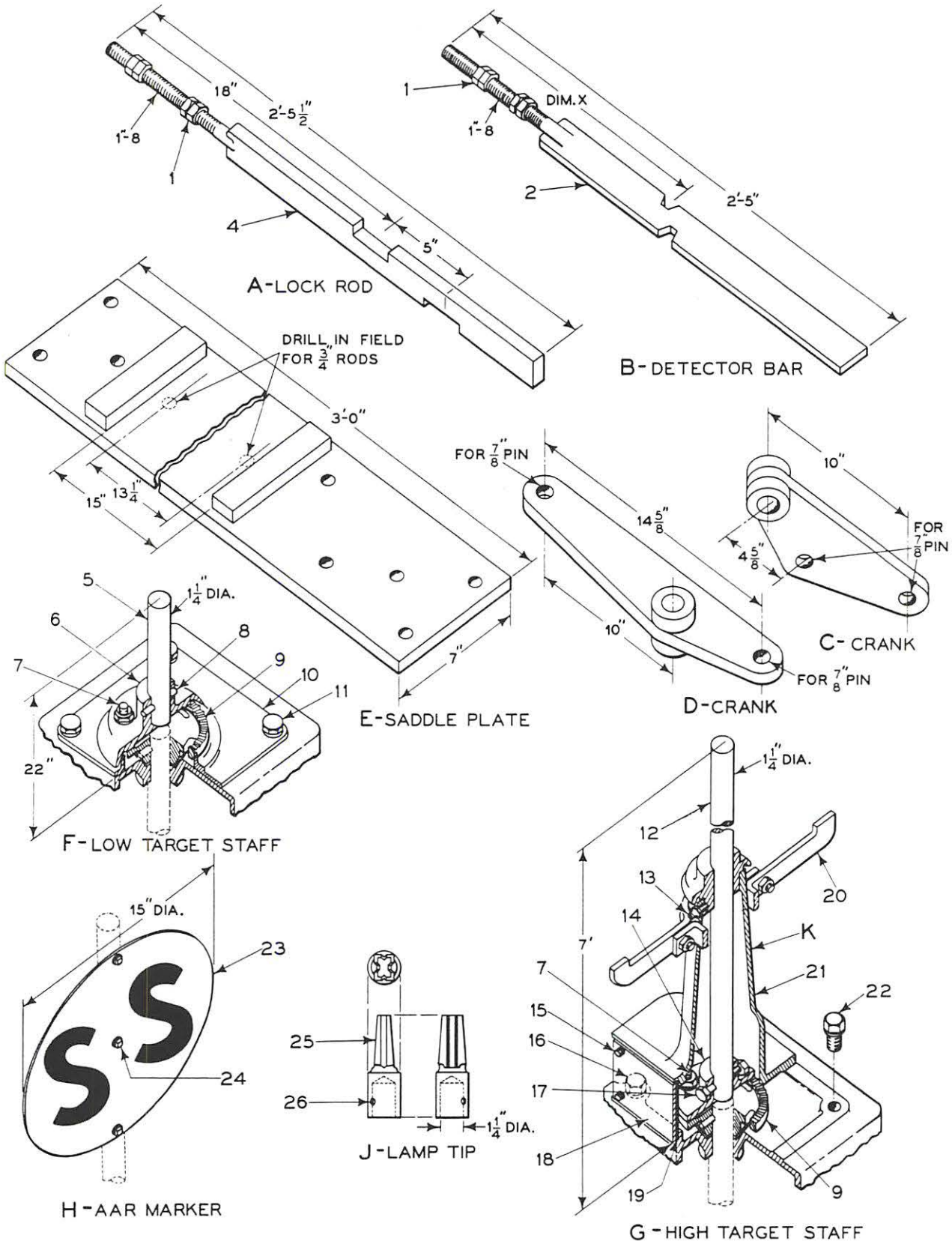
REF.	NAME	CATALOG NUMBER
28	SCREW, used as terminal post	P50-768
29	WASHER, for terminal posts	P50-718
30	SCREW, used as terminal post	P50-769
31	ROCKER, reverse for controller	P50-818
32	SHAFT, for controller	P50-820
33	BOLT, for adjusting clamp Ref. 34	P50-779
33A	NUT, for above	P85-205
34	CLAMP, for reverse controller	P50-824
35	BLOCK, upper, for fingers	P50-771
36	BLOCK, lower, for fingers	P50-772
37	SLEEVE, for ends of shaft	P50-710
37A	PIN, roll, for sleeve	P62-238
38	STUD COMPLETE, for clamp Ref. 34	P50-805
38A	NUT, for above	P50-807
38B	WASHER, lock, for above	P81-190

Acessories for Spring Switch Lock

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	LUG, 3-1/2" spacing, for lock rod	A85-560
B	LUG, 2-1/2" spacing, for lock rod	A85-561
C	LUG, 3-1/2" spacing, swivel type, for lock rod, includes cup nuts . .	A85-562
D	LUG, 2-1/2" spacing, for 1" dia. detector rod	A87-179
E	LUG, 3-1/2" spacing, for 1" dia. detector rod	A87-181
F	LUG, 2-1/2" spacing, for 1" dia. detector rod	A87-185
G	CONDUIT, 1-7/8" I. D., solid rubber, length 3'	A85-520
H	NIPPLE, pipe, 1-1/2" pipe thread for 1-7/8" I. D. rubber conduit . .	A85-867
J	CONDUIT, 1-1/2" flexible, length 3'	A85-868
K	COUPLING, 1-1/2" pipe thread for 1-1/2" flexible conduit	A85-866
1	FITTING, grease, for detector lugs	P87-101



Target staffs, lock rod, detector rods, saddle plates and cranks.

Target Staffs, Lock Rod, Detector Bars, Saddle Plates and Cranks

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	LOCK ROD, reversible, for either open or closed point side. Order lug from page 64	A87-230
B	DETECTOR BAR, for closed point side; for right- or left-hand layout. Dimension "X" = 17". Order lug from page 64	A87-239
B1	DETECTOR BAR, for open point side; for right- or left-hand layout. Dimension "X" = 22". Order lug from page 64	A87-241
C	CRANK, for closed-point layout	A50-790
D	CRANK, for open-point layout	A50-792
E	SADDLE PLATE, for No. 1 or 2 tie, drilled for latch stand	A50-795
F	LOW TARGET STAFF COMPLETE, 1-1/4" dia., not drilled for marker or lamp tip. Includes drive and driven couplings and all necessary hardware	A87-250
G	HIGH TARGET STAFF COMPLETE, 1-1/4" dia., not drilled for marker or lamp tip. Includes drive and driven couplings, pedestal, and all necessary hardware. May be shortened in the field as desired	A87-253
H	MARKER, A. A. R. for low or high target staffs, complete with bolts, nuts and washers, has SS lettered on each side	A50-799
J	LAMP TIP, for low or high target staffs, complete with bolt, nut and washer	A87-259
K	PEDESTAL COMPLETE, includes Refs. 13, 15, 18, 19, 21 and 22	P50-800
1	NUT, 1" - 8, for lock rods and detector bars	P91-144
2	ROD, only, for detector bars Ref. B	P50-797
2A	As above, except for Ref. B1	P50-798
4	ROD, only, for lock rod	P50-799
5	STAFF, only, 1-1/4" dia., 22" long	P50-825
6	COUPLING, for staff	P50-792
7	BOLT, for fastening couplings Refs. 6 and 14 to shaft	P50-780
7A	NUT, for above	P50-215
7B	WASHER, for above	P50-737
7C	WASHER, lead, for above	P50-738
8	PIN, roll, for fastening coupling to shaft	P50-733
9	COUPLING, for shaft	P50-790
10	PLATE	P50-782
11	SCREW, for fastening plate to switch machine	P50-726
11A	WASHER, lock, for above	P26-156
12	STAFF, 1-1/4" dia. x 7'-0 long	P50-796
13	FITTING, grease, for pedestal	P85-378
14	COUPLING, for staff	P50-791

Target Staffs, Lock Rod, Detector Bars, Saddle Plates and Cranks

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
15	SCREW, for cover plate	P50-809
16	SCREW, for fastening pedestal to switch machine	P50-761
16A	WASHER, lock, for above	P50-700
17	BOLT, for fastening coupling Ref. 14 to staff	P50-720
17A	NUT, for above	P85-413
17B	WASHER, lock, for above	P81-122
18	PLATE, cover	P50-724
19	GASKET, 2'-10-1/2" long, for plate. Specify number of feet	P50-778
20	STEP COMPLETE, for pedestal	P50-745
21	PEDESTAL, only	P50-793
22	SCREW, for fastening pedestal to switch machine	P50-730
22A	WASHER, lock, for above	P50-700
23	PLATE, only	P50-759
24	BOLT & NUT, for fastening plate to staff	P50-765
24A	WASHER, lock, for above	P76-106
24B	WASHER, for above.	P50-743
25	LAMP TIP, only	P50-827
26	BOLT & NUT, for fastening lamp tip to staff	P50-762
26A	WASHER, lock, for above	P81-205

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ELECTRIC LOCKS

CAT.NO.	DRAWING NO. QTY	NAME	PG.
P50-100	073	WASHER	11
P50-101	01273-10	WASHER	10, 17, 33
P50-102	0299	BOLT&NUT	10
P50-103	01273-8	WASHER	17
P50-105	0791	RIVET	10
P50-106	350-7	SCREW	13, 38
P50-107	401-298	PLATE	6
P50-108	401-307	PLATE	10
P50-109	401-616	PLATE	9
P50-110	420-48	COLLAR	13
P50-113	441-658	STUD	10
P50-114	27986	RIVET	9
P50-115	441-665	STUD	10
P50-116	441-666	STUD	10
P50-117	441-674	STUD	18
P50-118	786-385	SPRING	5
P50-119	786-299	SPRING	5
P50-120	786-301	SPRING	14
P50-121	786-320	SPRING	13
P50-122	924-3	GLASS	9
P50-123	1155-12	NUT	9, 13
P50-124	1396-33	SPRING	14
P50-125	01115-1	RING	6
P50-126	1581-34	SPRING	14
P50-127	2406-1	SCREW	5
P50-128	2873-3	SCREW	6
P50-129	3343-35	SCREW	17
P50-130	3440-70	SCREW	9, 13
P50-131	29757-38	SCREW	9
P50-132	3955-46	SCREW	
P50-133	5713-35	RING	6
P50-135	5718-28	PLATE	17
P50-137	6358-12	NUT	17
P50-138	6714-331	BUSHING	6
P50-139	03310-124	SCREW	5
P50-140	8513	JAW	10
P50-141	8514	PIN	10
P50-142	8885-120	STUD	5
P50-143	8942-61	BUSHING	6
P50-144	9665-20	STUD	9
P50-145	9665-22	STUD	14
P50-146	9665-32	STUD	9
P50-147	9754-4GR1	SHAFT	5
P50-149	13061-16GR2	CONTACT	13
P50-150	13061-17GR2	CONTACT	13
P50-151	13061-26GR2	CONTACT	13
P50-152	13061-32GR2	CONTACT	13
P50-153	13061-92GR1	CONTACT	13
P50-154	13061-93GR1	CONTACT	13
P50-155	13166-11	SPRING	6
P50-156	13166-12	SPRING	6
P50-157	01250-11	WASHER	13
P50-158	16110-21	HASP	10
P50-161	17188-6	PIN	6
P50-164	17569 GR1	STUD	14
P50-165	17570-1GR1	DOG	6
P50-166	17908	PIN	13
P50-167	18236	HANDLE	9
P50-168	18259-2GR1	DOOR	10
P50-169	18296	BAR	17
P50-170	20360-11	SCREW	5
P50-171	20910-18GR1	CONTROLLER	13
P50-172	20911-14	TERM BLOCK	13
P50-173	21185-9	ROD	10
P50-174	21185-23	ROD	10
P50-175	21186-9	PLUNGER	10
P50-176	21186-6	PLUNGER	10
P50-178	21192-2	PIN	6
P50-179	21194-7GR3	MECHANISM	5
P50-180	21592-18	BLOCK	
P50-181	28342	COMMUTATOR	6
P50-182	28344 GR1	WASHER	6
P50-183	29513-21	SUPPORT	5
P50-184	29524-49GR3	ARMATURE	5
P50-185	29525-1	SCREW	5
P50-187	30804-27	STRAP	10
P50-188	30804-28	STRAP	10
P50-189	31066-16GR20	COIL	6
P50-191	31807-46	BOX	17
P50-192	31870-3	FRAME	5
P50-193	31875-1	SHAFT	6
P50-194	31877-1	KEY	6
P50-195	31880-1GR2	BOARD	5
P50-196		HANDLE WITH SET SCREW	6
	31886-1	HANDLE	
	17708-105	SCREW	
P50-197	33219-15	PLATE	10
P50-199	35220-4GR2	CASE	9

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CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P50-200	35220-4GR4		CASE	9
P50-201	35221-31		CASE	
P50-202	35221-13		CASE	9
P50-203	35269-19		TRUNNION	5
P50-204	35845-205		PLATE	14
P50-205	36020-5		HOODS	10
P50-206	36021-5		PLATE	10
P50-207	36022		SCREEN	10
P50-208	38043-33		CLIP	14
P50-209	38179-1GR1		ROD	9
P50-210	38179-2GR3		ROD	9
P50-211	38179-2GR6		ROD	9
P50-212	38188-2GR1		INDICATOR	5
P50-213	38280-254		STRAP	18
P50-214	45818-17		BOLT	17
P50-215	42333-50		NUT	6, 67
P50-216	42441-31		ROD	11
P50-217	42441-37		ROD	11
P50-218	42561-34GR1		ARMATURE	5
P50-219	42836-43		YOKE	6
P50-220	43028-8		RIVET	10
P50-223	03606-8		SCREW	5
P50-224	45572-43		SCREW	13
P50-225	45572-46		SCREW	17
P50-226	45597-23		STOP	13
P50-227	45597-24		STOP	13
P50-229	47669-2GR5		BASE	17
P50-230	47669-2GR7		BASE	17
P50-231	47669-4GR1		BASE	17
P50-232	47669-4GR3		BASE	17
P50-233	49134-41		COVER	17
P50-234	49134-80		COVER	10
P50-235	49980-1		FRAME	13
P50-236	50668-2		SCREW	17
P50-237	51562-9		BEZEL	9
P50-238	42333-57		NUT	9, 41
P50-239	51876-14		BASE	17
P50-240	51876-15		BASE	17
P50-241	51876-17		BASE	17
P50-242	51876-18		BASE	17
P50-243	52318-62GR1		COVER	9
P50-244	52681-13		SCREW	9, 10
P50-246	53141-11		SCREW	17
P50-247	53721-94		CLIP	10
P50-248	53735-2GR2		LATCH	14
P50-249	54392-16		SCREW	10
P50-250	55861-24		STOP	13
P50-251	56604-32GR1		PLATE	9
P50-252	56854-4GR2		ARM	14
P50-253	03610-116		SCREW	14
P50-254	58546-2GR1		PLUNGER	13
P50-255	58750-4GR1		EMER REL	13
P50-256	58752 GR1		LEVER	13
P50-257	58752-2GR1		LEVER	5
P50-258	58759 GR1		STRAP	9
P50-261	59777-9GR1		BRACKET	5
P50-400			BOLT & NUT	
	3065-2		SCREW	
	1048-5		NUT	
P50-402	0441-6		SCREW	33
P50-403	3343-34		SCREW	33, 57
P50-407	401-299		PLATE	34
P50-409	441-491		STUD	38
P50-410	441-551		STUD	35
P50-411	500-21		PIN	34
P50-412	626-208		WASHER	34
P50-413	715-18		PIN	37
P50-414	715-55		PIN	33
P50-415	730-112		PIN	33
P50-416	737		PIN	34
P50-417	739-10		BUSHING	33
P50-418	786-275		SPRING	33
P50-419	786-276		SPRING	38
P50-420	786-277		SPRING	34
P50-421	924-27		GLASS	34
P50-422	01250-4		WASHER	38
P50-423	1225-180		WASHER	34
P50-424	03606-14		SCREW	38
P50-425	03606-24		SCREW	38
P50-426	2889-4		BOLT	41
P50-427	2889-5		BOLT	41
P50-429	2889-8		BOLT	41
P50-430	6714-149		BUSHING	34
P50-431	03310-120		SCREW	34, 35
P50-432	6890		PIN	41
P50-433	6969		PIN	34
P50-434	7828		PIN	34
P50-435	8942-86		BUSHING	33

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CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P50-436	13014-265		GASKET	34, 35
P50-437	13014-297		GASKET	34
P50-438	13061-77GR1		CONTACT	39
P50-439	13061-77GR2		CONTACT	39
P50-440	13063-121		SPRING	38
P50-441	16914-4		STAPLE	34
P50-443	17188-30		PIN	35
P50-444	17908-1		PIN	39
P50-446	20127-23		PIN	37
P50-447	21060-6		GUIDE	33
P50-448	21506-61		PLATE	41
P50-449	21506-92		PLATE	41
P50-453	29524-36GR1		ARMATURE	38
P50-454	30220-65		PLATE	39
P50-455	30220-66		PLATE	38
P50-456	30220-67		PLATE	38
P50-457	31066-32GR51		COIL	38
P50-458	31934-24		BLOCK	39
P50-460	35269-17		TRUNNION	34
P50-461	35269-18		TRUNNION	34
P50-462	35845-135		PLATE	33
P50-463	35845-155		PLATE	34
P50-464	37706-4		ROLLER	37
P50-465	38272-2		SCREW	34
P50-466	38931-2		NUT	41, 54
P50-468	41673-57		SHIM	33
P50-469	41892-9		BUSHING	34
P50-470	42760-12GR5		CONNECTOR	37
P50-471	42836-14		YOKE	38
P50-473	03606-12		SCREW	38
P50-474	45572-14		SCREW	33
P50-475	45609-2		SCREW	33
P50-476	46976-160		PLATE	41
P50-478	46987-27		ROD	42
P50-479	46987-32		ROD	41
P50-483	46987-54		ROD	41
P50-486	46987-64		ROD	41
P50-487	46987-66		ROD	41
P50-488	46987-68		ROD	42
P50-489	46987-69		ROD	42
P50-490	46987-70		ROD	42
P50-492	46987-76		ROD	42
P50-493	50062-30		SPACER	38
P50-494	50694		RIVET	41
P50-495	51320-55GR1		SUPPORT	38
P50-496	51320-56GR1		SUPPORT	38
P50-497	51320-56GR2		SUPPORT	38
P50-498	51320-57GR1		SUPPORT	38
P50-501	53058-38GR1		RECEPTACLE	38
P50-502	54581-6		LATCH	33
P50-503	54625-83		PLATE	39
P50-504	55861-19		STOP	38
P50-505	55861-22		STOP	39
P50-506	55861-23		STOP	39
P50-507	20132-12		PLUG	34
P50-509	58449 GR1		ARM	37
P50-510			SUPPORT COMPLETE	41
	58667 GR1		SUPPORT	
	6890		PIN	
	50694		RIVET	
P50-511			SUPPORT	41
	58667 GR2		SUPPORT	
	6890		PIN	
	50694		RIVET	
P50-512			SUPPORT	41
	58667-1GR1		SUPPORT	
	50694		RIVET	
P50-513			SUPPORT	41
	58667-1GR2		SUPPORT	
	50694		RIVET	
P50-514			SUPPORT	41
	58667-2GR1		SUPPORT	
	50694		RIVET	
P50-520	58668		SUPPORT	41
P50-530	58668-1		SUPPORT	41
P50-531	58668-2		SUPPORT	41
P50-532	58668-3		SUPPORT	41
P50-533	58668-5		SUPPORT	41
P50-537	58669		CLAMP	41
P50-538	58669-1		CLAMP	41
P50-539	58801-1GR50		MECHANISM	37
P50-540	58801-1GR51		MECHANISM	37
P50-541	58801-1GR53		MECHANISM	37
P50-542	38638-14GR1		CASE	33
P50-543	58814-2		COVER	33
P50-544	58814-3		COVER	35
P50-545	58815-3		STAND	33
P50-546	58816-6		PEDAL	33
P50-547	58818-3		BLOCK	37
P50-548	58821-4		PLUNGER	34
P50-549	58823-4		BRACKET	37

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CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P50-550	58824-1		CRANK	33
P50-551	58825-1		PLUNGER	33
P50-552	58833-2		PLATE	34
P50-553	58837-1		SHAFT	33
P50-555	58976		PIN	33
P50-556	58977		TANG	33
P50-557	58980	GR1	DOG	37
P50-558	58982		FRAME	37
P50-559	58983	GR1	BLOCK	37
P50-560	58983	GR2	BLOCK	37
P50-561	58983	GR7	BLOCK	37
P50-562	58985	GR1	COVER	33
P50-563	58988		CAM	34
P50-564	58989		STUD	35
P50-565	58990	GR1	CAM	34
P50-566	58991	GR1	HANDLE	34
P50-567	58992		GUARD	33
P50-568	58993	GR1	FINGER	37
P50-569	58993	GR2	FINGER	37
P50-570	59559		SUB BASE	41
P50-573	59836	GR1	CAM	34
P50-574	81409	GR1	TUBING	37
P50-575	401-118		PLATE	39
P50-577	18285-5		PIN	39
P50-702	0477-1		NUT	53
P50-703	0574		RIVET	57
P50-704	401-319		PLATE	54
P50-705	420-54		COLLAR	59
P50-706	441-691		STUD	57
P50-707	491-6		PIN	59
P50-708	504-399		PIN	53
P50-710	585-51		SLEEVE	62
P50-712	626-126		WASHER	61
P50-713	0272-12		NUT	53
P50-714	786-213		SPRING	53
P50-715	786-233		SPRING	61
P50-716	894-27		BOLT	53
P50-717	1156-13		NUT	57
P50-718	1601-118		WASHER	62
P50-720	2472-17		BOLT	
P50-721	3343-17		SCREW	54
P50-723	5713-44		RING	53
P50-724	5718-41		PLATE	68
P50-725	5718-103		PLATE	57
P50-726	6006-2		SCREW	53, 67
P50-727	01250-13		WASER	59
P50-728	6714-304		BUSHING	61
P50-729	6714-305		BUSHING	61
P50-730	6768-1		SCREW	53, 68
P50-731	9665-33		STUD	57
P50-732	17188-8		PIN	59
P50-733	17188-11		PIN	67
P50-734	17188-15		PIN	61
P50-735	17188-16		PIN	53
P50-737	01250-20		WASHER	6, 67
P50-738	17492-2		WASHER	67
P50-739	18524-4		PLUG	57
P50-740	19388	GR1	SPRING	53
P50-741	19390		ROD	53
P50-742	19391	GR1	HOUSING	53
P50-743	19867-2		WASHER	68
P50-744	20127-9		PIN	59
P50-745	20416-8	GR1	STEP	68
P50-746	29830-5		SECTOR	54
P50-747	31942-69		ROLLER	57
P50-748	31942-79		ROLLER	59
P50-749	31942-100		ROLLER	61
P50-750	31955-1		COLLAR	53
P50-751	32367-17		CAP	53
P50-753	34232-30		FITTING	57
P50-754	34792		STRAP	57
P50-756	36183-53		GAUGE	57
P50-757	38068		JAW	53
P50-758	39319-44		BOLT	57
P50-759	39754-121		PLATE	68
P50-760	40907-21		NUT	59
P50-761	42296		SCREW	68
P50-762	43427-4		BOLT&NUT	68
P50-764	44729-8		BOLT&NUT	53
P50-765	45634-9		BOLT&NUT	68
P50-766	45701-1	GR1	SPRING	61
P50-767	45702-1	GR1	SPRING	61
P50-768	45703	GR2	SCREW	62
P50-769	45704	GR2	SCREW	62
P50-770	45719-2		BLOCK	61
P50-771	45725-1		BLOCK	62
P50-772	45726-3		BLOCK	62
P50-773	45728		BUSHING	61
P50-775	45740		SCREW	61
P50-776	45818-10		BOLT	59

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CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P50-777	47509-2		STUD	54, 59
P50-778	47562-6		GASKET	68
P50-779	48632-3		BOLT	62
P50-780	49527-20		BOLT	67
P50-781	49610-1GR1		RACK	53
P50-782	49628-14		PLATE	67
P50-783	49628-21		PLATE	57
P50-784	49628-22		PLATE	57
P50-786	49630-5		SHAFT	59
P50-787	49640-1		WASHER	59
P50-788	49679 GR1		COVER	59
P50-789			CASE 49680 -3 GR 1	57
	49677-10		CASE	
	49628-22		PLATE	
	49628-21		PLATE	
	35497		HASP	
	0114		RIVET 1/4" X 1 1/2" RD.HD.	
	0574		RIVET 1/4" X 1 3/4" RD.HD.	
	34792		STRAP	
	50426-2GR1		BAR COMPLETE	
	3343-34	4	SCREW,CAP 1/2"-13 X 1 HEX HD.	
	01273-10	4	WASHER,1/2" LOCK	
	39319-44	2	EYE BOLT,3/8"-16	
	1156-13	2	NUT 3/8"-16 HEX	
	34232-17	3	OILER 1/8" PIPE TH'D	
	34232-30		OILER 1/8" PIPE TH'D (ELBOW)	
	9665-33	2	STUD	
	0678-2	6	PLUG 1/2" PIPE	
	18524-4	2	PLUG 1 1/2" PIPE	
	20132-11		PLUG 1 1/2"	
	01273-7	4	WASHER,LOCK 5/16"	
	5718-103		PLATE,COVER	
	13014-309		GASKET	
	0441-5	4	SCREW,CAP 5/16"-18 X 5/8 HEX	
P50-790	49761		COUPLING	67

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ELECTRIC LOCKS

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P50-791	49761-1		COUPLING	67
P50-792	49761-3		COUPLING	67
P50-793	49978		PEDESTAL	68
P50-794	50034		CRANK	53
P50-795	50426-2GR1		BAR	57
P50-796	50452-24GR1		STAFF	67
P50-797	50465-3		ROD	67
P50-798	50465-4		ROD	67
P50-799	50842-20		ROD	67
P50-800	50844 GR1		PEDESTAL	67
P50-801	51114-24		GUARD	54
P50-802	51114-25		GUARD	53
P50-803	51449-2GR3		CONTROLLER	61
P50-804	51449-3GR3		CONTROLLER	61
P50-805	51451-1GR1		STUD	62
P50-806	52556-8		ARM	54
P50-807	52822-16		NUT	62
P50-808	53029-23		WASHER	61
P50-809	54972-5		SCREW	68
P50-810	55470-2		SCREW	61
P50-811	55470-11		SCREW	61
P50-812	57322-1GR1		BAR	59
P50-813	57323-7GR1		PLUNGER	53
P50-814	57330-1		LATCH	59
P50-815	57338-5		ROCKER	61
P50-816	57338-6		ROCKER	61
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P50-819	57351-8		BAR	59
P50-820	57359-1		SHAFT	62
P50-821	57359-3		SHAFT	61
P50-822	57360-1		SHAFT	54
P50-823	57363-2		BUSHING	53
P50-824	57365-1		CLAMP	62
P50-825	57375-44		STAFF	67
P50-826	57377-1		PLATE	61
P50-827	57380-6		LAMP TIP	68
P50-828	57985 GR1		BLOCK	61
P50-829	57985-1GR1		BLOCK	61
P50-830	52681		SCREW	54
P50-831	17708-105		SCREW	6
P50-832	17188-44		PIN	10
P50-833	43460-18		GASKET-SPECIFIED FEET	

CATALOG SECTION P62
PARTS LIST
Type B Relays
Type VTB Relays
Plug-In Type

FOR ASSEMBLIES, SEE CATALOG SEC. 62

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Flasher, Signal. 14
Magnetic-Stick 14
Neutral, Size 1. 4
Neutral, Size 2. 28
Polarized. 32
Slow-Pickup, Slow-Release & Quick-Crossover 26
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GENERAL RAILWAY SIGNAL
A UNIT OF GENERAL SIGNAL
ROCHESTER NEW YORK 14602

Type B and VTB Relays

GENERAL INFORMATION

Parts for Type B, Size 1 neutral relays are listed beginning on page 4. This list includes many parts common to all Type B, Size 1 relays, such as approach relays, biased-neutral relays, etc. Parts not common to all Type B, Size 1 neutral relays, are listed separately under their specific relay headings.

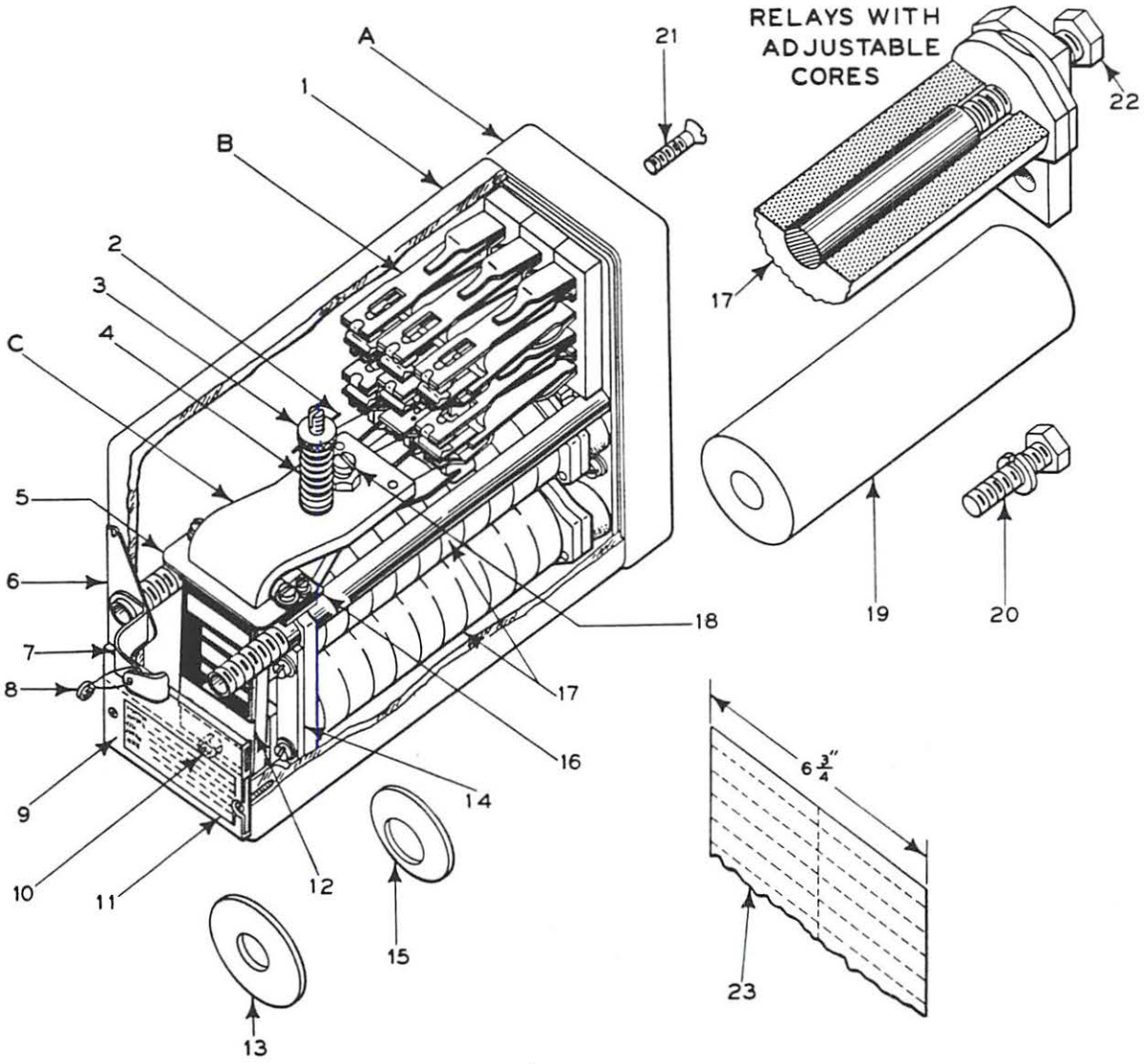
Ordering information for Type B, Size 2 relays is presented in a similar manner, with parts for Type B, Size 2 neutral relays, including parts common to certain other Type B, Size 2 relays, listed on page 28. Parts not common with the B2 neutral parts are listed separately under their specific relays.

For Assemblies, see Catalog Section 62.

Periodic Tests

The procedures for periodic testing of Type B relays, as well as more detailed descriptions, can be found in GRS Pamphlet 1457 on page 30 — or write to your GRS sales office for such specific data as you may need.

Memoranda



THIS ILLUSTRATION ALSO SHOWS COMMON PARTS OF OTHER TYPE B, SIZE 1 RELAYS.

Type B Size 1, neutral relay.

Type B, Size 1 Relays

Common Parts List

This list covers repair parts for all Type B, Size 1 relays, except special parts for the following:

Biased-neutral	See page 10
Code-responsive	" " 18
Magnetic-stick	" " 14
Flasher, signal	" " 14
Flasher, highway crossing, electronically driven	" " 26
Slow-pickup, slow-release and quick-crossover	" " 26
Thermal	" " 22
Two-rate charge-control	" " 10

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	BASE, includes tubes for studs, for all Type B1 relays except magnetic-stick and code-responsive.	P62-506
B	CONTACT GROUP, for references see page 54	
*C	ARMATURE, includes top and bottom residual screws and all riveted parts. For all Type B1 relays except biased-neutral; signal flasher; magnetic-stick;and code-responsive.	P62-312
*1	COVER, for all Type B1 relays except two-rate charge-control; and thermal.	P62-579
2	NUT LOCK, for nut Ref. 3.	P62-575
3	NUT, knurled.	P62-142
*4	SPRING, for setting back contacts, see pages 8 and 9 for ordering information.	
*5	PLATE, armature retaining, for all B1 relays except magnetic-stick and code-responsive	P62-473
5A	SCREW, for above	P62-435
5B	WASHER, for above	P62-260
5C	WASHER, lock, for above	P62-402
6	SPRING, flat, follow-up for nut Ref. 7	P62-236

* For parts not listed here, see lists for specific relays.

Type B, Size 1 Relays

Common Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
7	NUT, for holding and sealing cover Ref. 1 in place	P62-578
8	SEAL, for relay	P62-299
9	HOLDER, for test data form	P62-356
9A	SCREW, for above	P62-593
10	SCREW, residual, No. 6-40	P62-476
10A	NUT, for above	P62-182
10B	SCREW, residual, No. 10-48.	P62-255
10C	NUT, for above	P62-128
* 11	TEST DATA FORM, for all Type B1 relays except two-rate charge control; magnetic-stick; code-responsive; thermal; signal flasher; and switch-overload	P62-383
11A	As above, except for switch-overload relay	P62-690
* 12	NAME PLATE BLANK, for all Type B1 relays except thermal, magnetic-stick and code-responsive relays	P62-110
12A	SCREW, for above	P62-442
13	WASHER, copper, for 9/16" dia. cores	P62-156
13A	As above, except for .736" dia. cores.	P62-157
13B	Same as Ref. 13, except fibre washer, for 9/16" dia. cores	P62-293
14	SHUNT STRIP, for slow-pickup relays.	P62-242
14A	SCREW, for above	P85-870
14B	WASHER, lock, for above	P62-402
15	WASHER, spring, for 9/16" dia. cores	P62-158
15A	As above, except for .736" dia. cores.	P62-159
16	PLATE, armature bearing	P62-470
16A	SCREW, for above	P62-445
16B	WASHER, lock, for above	P65-730
17	COIL, see pages 8 and 9 for ordering information	
18	SCREW, for armature	P62-150
18A	LOCK NUT, for above	P62-321
19	SLUG, copper, full length, for 9/16" dia. cores	P62-425
19A	As above, except half length	P62-426
19B	Same as Ref. 19, except full length, for .736" dia. cores	P62-427

* For parts not listed here, see lists for specific relays.

Type B, Size 1 Relays

Common Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
19C	Same as Ref. 19, except half length, for .736" dia. cores	P62-428
20	SCREW, for mounting cores	P62-179
20A	WASHER, lock, for above	P65-729
21	SCREW, for mounting contact blocks	P62-105
22	NUT, for adjustable core	P62-395
23	TAG, blank, for circuit designation, contains 60 blanks, for use in holder Ref. 9	P62-432

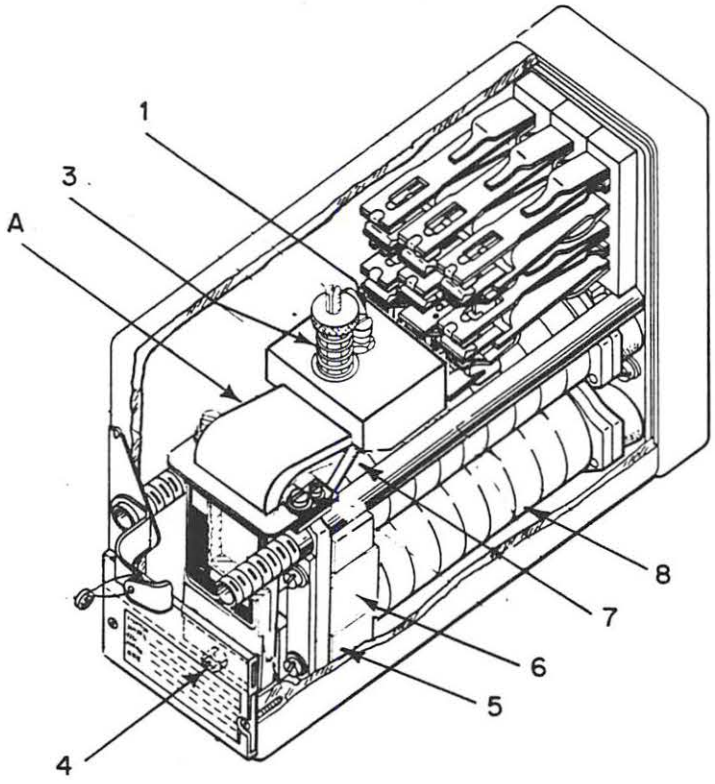
To order, specify "Coil or Spring" and give catalog number

Coil (Ref. 17)			ORDERING REFERENCES	
			Coil (Ref. 17)	Spring (Ref. 4)
Res. Ohms	Top or Bottom	Used with Catalog No.	Catalog Number	Catalog Number
.12	Either	A62-100	P62-543	P62-133
2.0	"	A62-105	P62-539	P62-133
.9	"	A62-106	P62-540	P62-133
5.2	"	A62-107	P62-544	P62-133
105	"	A62-205	P62-547	P62-131
.12	"	A62-211	P62-543	P62-131
.2	"	A62-213	P62-542	P62-131
450	Top	A62-215	P62-519	P62-131
.45	Bottom	A62-215	P62-541	P62-131
450	Top	A62-217	P62-519	P62-131
.069	Bottom	A62-217	P62-563	P62-131
.45	Bottom	A62-219	P62-541	P62-131
450	Top	A62-221	P62-519	P62-131
.12	Bottom	A62-221	P62-543	P62-131
450	Top	A62-223	P62-519	P62-131
.046	Bottom	A62-223	P62-564	P62-131
450	Top	A62-231	P62-519	P62-131
.2	Bottom	A62-231	P62-542	P62-131
450	Top	A62-236	P62-519	P62-131
.61	Bottom	A62-236	P62-545	P62-131
250	Either	A62-255	P62-518	P62-131
.9	"	A62-260	P62-540	P62-131
2.0	"	A62-261	P62-539	P62-131
250	"	A62-262	P62-518	P62-131
.9	"	A62-270	P62-540	P62-131
2.0	"	A62-271	P62-539	P62-131
.9	"	A62-275	P62-540	P62-131
2.0	"	A62-276	P62-539	P62-131
250	"	A62-277	P62-518	P62-131
450	"	A62-278	P62-519	P62-130
2.0	"	A62-290	P62-539	P62-131
3.0	"	A62-293	P62-546	P62-130
42	"	A62-295	P62-521	P62-131
450	"	A62-296	P62-519	P62-131
175	"	A62-300	P62-517	P62-131
42	"	A62-305	P62-521	P62-131
175	"	A62-306	P62-517	P62-131
250	"	A62-307	P62-518	P62-131
450	"	A62-308	P62-519	P62-131
175	"	A62-309	P62-517	P62-131
250	"	A62-310	P62-518	P62-131
450	"	A62-311	P62-519	P62-131
450	Top	A62-312	P62-519	P62-131
8	Bottom	A62-312	P62-733	P62-131
42	Top	A62-313	P62-521	P62-131
1.6	Bottom	A62-313	P62-552	P62-131
4.5	Either	A62-314	P62-553	P62-131
29.5	Top	A62-315	P62-551	P62-131
20.5	Bottom	A62-315	P62-520	P62-131

To order, specify "Coil or Spring" and give catalog number

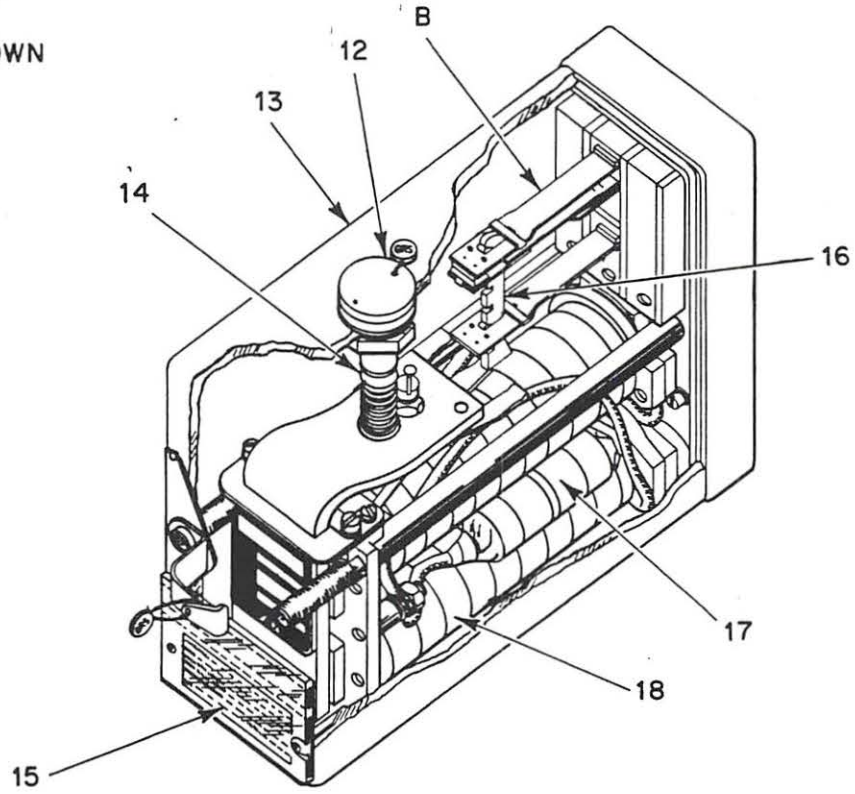
Coil (Ref. 17)			ORDERING REFERENCES	
			Coil (Ref. 17)	Spring (Ref. 4)
Res. Ohms	Top or Bottom	Used with Catalog No.	Catalog Number	Catalog Number
50	Either	A62-317	P62-515	P62-131
900	"	A62-318	P62-523	P62-131
50	"	A62-319	P62-515	P62-131
900	"	A62-320	P62-523	P62-131
700	Top	A62-324	P62-775	P62-131
28.5	"	A62-325	P62-776	P62-131
135	"	A62-335	P62-538	P62-131
65	Bottom	A62-335	P62-537	P62-131
220	"	A62-340	P62-530	P62-131
300	"	A62-341	P62-533	P62-131
220	"	A62-345	P62-530	P62-131
194	"	A62-350	P62-532	P62-131
460	"	A62-353	P62-534	P62-131
450	"	A62-355	P62-519	P62-131
*470	"	A62-357	P62-524	P62-131
**194	"	A62-357	P62-532	P62-131
194	"	A62-358	P62-532	P62-131
*340	"	A62-359	P62-522	P62-131
**194	"	A62-359	P62-532	P62-131
**194	"	A62-360	P62-532	P62-131
12	Either	A62-365	P62-691	P62-133
300	Bottom	A62-369	P62-533	P62-131
800	"	A62-370	P62-525	P62-131
400	"	A62-372	P62-534	P62-130
900	"	A62-375	P62-523	P62-130
40	Either	A62-380	P62-548	P62-131
50	"	A62-401	P62-515	P62-132
100	"	A62-406 & 407	P62-516	P62-130
1.7	Top	A62-410	P62-536	P62-131
2.2	Bottom	A62-410	P62-535	P62-131
220	Bottom	A62-415	P62-530	P62-131
1550	Either	A62-417	P62-774	P62-130
180	Either	A62-421	P62-565	P62-131
.045	Top	A62-424	P62-779	P62-130
450	Bottom	A62-424	P62-519	P62-130
250	Either	A62-427	P62-518	P62-131
250	Either	A62-429	P62-554	P62-133
135	Top	A62-430 & 431	P62-529	P62-130
.064	Bottom	A62-430 & 431	P62-568	P62-130
1225	Top	A62-432	P62-777	P62-130
.068	Bottom	A62-432	P62-778	P62-130
220	Top	A62-433	P62-530	P62-783
1.85	Bottom	A62-433	P62-781	P62-783
40	Top	A62-519	P62-229	P62-782
40	Bottom	A62-519	P62-229	P62-782
460	Top	A62-521	P62-534	P62-131
1.0	Bottom	A62-522	P62-780	P62-782

* for use with relay having copper slug
** for use with relay having aluminum slug



Type B Size 1, biased-neutral relay.

FOR PARTS NOT SHOWN HERE, SEE PAGE 4.



Type B Size 1, two-rate charge-control relay.

Type B, Size 1 Biased-Neutral and Two-Rate Charge-Control Relays

Parts List

For parts not listed here, see page 4.

REF.	NAME	CATALOG NUMBER
A	ARMATURE COMPLETE, includes top and bottom residual screws and all riveted parts, may be used on all Type B1 biased-neutral relays	P62-311
B	CONTACT GROUP, one back contact, metal-to-metal	P62-492
1	SCREW, for armature, No. 6-40.	P62-151
3	SPRING, for setting back-contact pressure	P62-133
4	SCREW, residual	P62-476
4A	NUT, for above	P62-182
4B	SCREW, residual, No. 10-48.	P62-255
4C	NUT, for above	P62-128
5	MAGNET (2 reqd.) give catalog or drawing number of relay when ordering	P62-398
6	CLAMP, for magnets.	P62-677
7	LEAKAGE STRIP	P62-675
8	COIL, upper or lower, 1.0 ohms.	P62-559
8A	COIL, upper or lower, 31.5 ohms	P62-558
8B	COIL, upper or lower, 165 ohms.	P62-562
8C	COIL, upper or lower, 250 ohms.	P62-554
8D	COIL, upper or lower, 375 ohms.	P62-560
12	COVER, for opening to relay adjustment.	P62-618
12A	NUT, for above	P62-204
12B	WASHER, for above.	P62-123
13	COVER COMPLETE, with relay adjustment cover	P62-642
14	NUT, for relay adjustment	P62-661
15	TEST DATA FORM, for two-rate charge-control relay.	P62-390
16	PUSHER.	P62-460
16A	CLIP for above, two required	P62-577

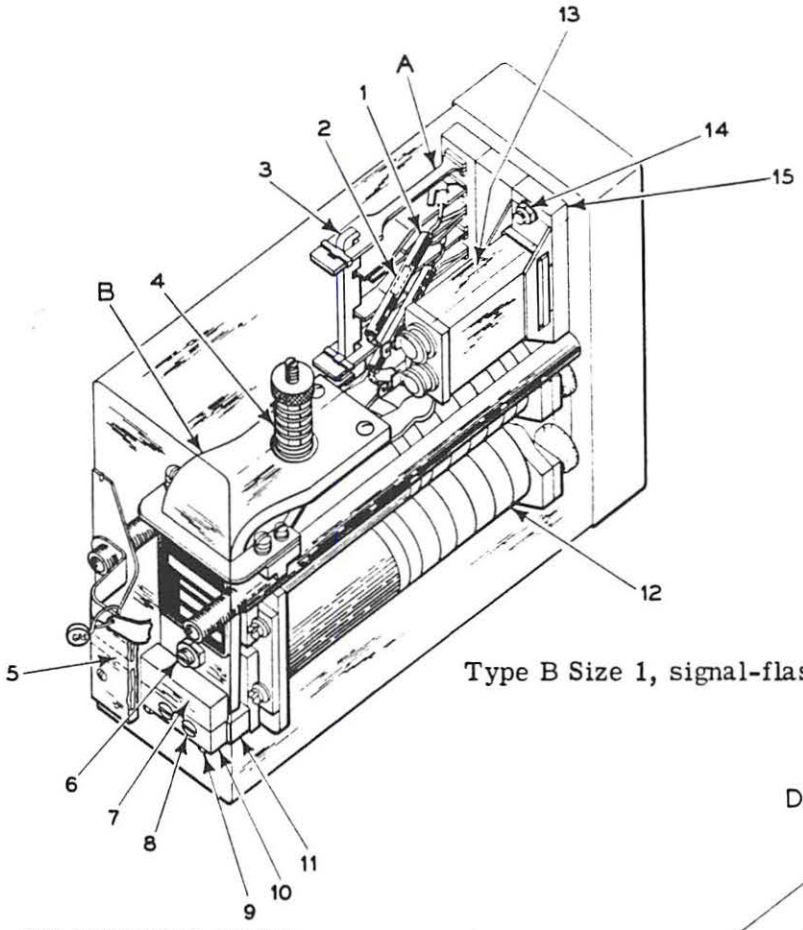
Type B, Size 1 Biased-Neutral and Two-Rate Charge-Control Relays

Parts List

For parts not listed here, see page 4

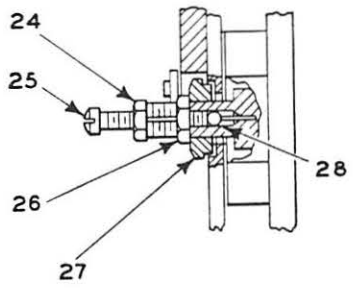
REF.	NAME	CATALOG NUMBER
17	RESISTOR, only, 205 ohms.	P62-658
17A	As above, except 220 ohms.	P62-659
17B	Same as Ref. 17, except 865 ohms.	P62-660
18	COIL, upper or lower, 250 ohms.	P62-555
18A	COIL, upper or lower, 680 ohms.	P62-556
18B	COIL, upper or lower, 6620 ohms	P62-557

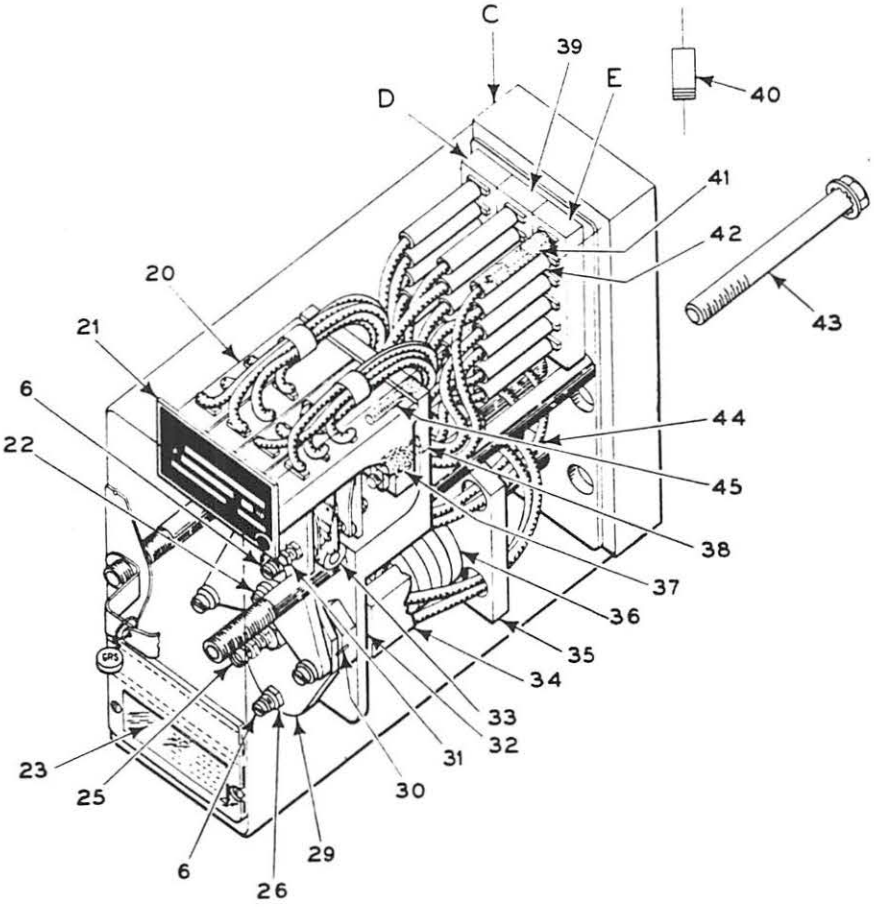
Memoranda



Type B Size 1, signal-flasher relay.

FOR PARTS NOT SHOWN HERE SEE PAGE 4.





Type B Size 1, magnetic-stick relay.

Type B, Size 1 Signal-Flasher and Magnetic-Stick Relays

Parts List

For parts not listed here, see page 4.

REF.	NAME	CATALOG NUMBER
*A	CONTACT GROUP COMPLETE, two independent backs, metal-to-metal	P62-501
B	ARMATURE COMPLETE, includes residual screws and all riveted parts	P62-313
C	BASE COMPLETE, includes tubes for studs	P62-508
*D	CONTACT GROUP COMPLETE, two dependent, for left side of relay	P62-656
*E	CONTACT GROUP COMPLETE, two dependent, for right side of relay	P62-657
1	TUBING, .144" I. D. x 2-1/2" long	P62-730
1A	As above, except .040" I. D.	P62-731
2	Resistor, 12 ohms	P62-683
3	PUSHER, for contact group	P62-463
3A	CLIP, for above, two required	P62-577
4	SPRING, for setting back-contact pressure	P62-133
5	TEST DATA FORM.	P62-385
6	SCREW, headless, residual, for armature	P62-198
6A	NUT, for above, for flasher relay only	P62-410
7	STOP, for armature	P62-244
8	SCREW, for fastening stop to magnet	P62-250
9	BLOCK, for armature	P62-212
10	SCREW, for fastening block to stop	P62-194
10A	WASHER, for above	P62-262
*11	MAGNET, only	P62-397
12	COIL, upper or lower, 245 ohms	P62-566
13	CAPACITOR, 1.0 mfd	P62-393
14	SCREW, for mounting capacitor	P62-201
14A	NUT, for above	P62-182
14B	WASHER, lock, for above	P62-406
15	CONTACT BLOCK, for mounting capacitor	P62-478
20	CONTACT GROUP, includes fingers only	P62-663
21	NAME PLATE	P62-116

* Give catalog or drawing number of relay when ordering.

Type B, Size 1 Signal-Flasher and Magnetic-Stick Relays

Parts List

For parts not listed here, see page 4.

REF.	NAME	CATALOG NUMBER
21A	SCREW, for above	P62-419
21B	WASHER, for above.	P50-422
22	SCREW, for mounting contact driver.	P62-412
22A	WASHER, lock, for above	P62-409
23	TEST DATA FORM	P62-388
24	NUT, hex., for screw Ref. 25	P62-183
25	SCREW, for locking armature bearing.	P62-454
26	NUT, for screws, Refs. 6 and 25, for magnetic-stick relay only	P62-411
27	NUT, for screw, Ref. 25.	P62-315
28	BALL, for armature	P62-302
29	ARMATURE, only.	P62-273
30	PLATE, armature bearing	P62-472
31	SCREW, for adjusting contacts.	P62-224
31A	NUT, for above	P62-692
32	WASHER, for coils	P62-163
33	PUSHER, for operating contacts	P62-664
* 34	MAGNET, only	P62-396
35	YOKE, for relay	P62-153
36	COIL, 3.5 ohms.	P62-281
36A	As above, except 17 ohms	P62-282
36B	Same as Ref. 36, except 250 ohms.	P62-283
37	SPRING, for screw, Ref. 38	P62-141
38	SCREW, for mounting contact blocks.	P62-453
38A	NUT, for above	P62-433
39	CONTACT GROUP, terminal.	P62-653
40	RESISTOR, 150 ohms.	P62-685
40A	As above, except 510 ohms.	P62-684
41	TERMINAL, for attaching wires to terminal block	P62-431
42	TUBING, 5 mm x 1-1/4" long	P62-450

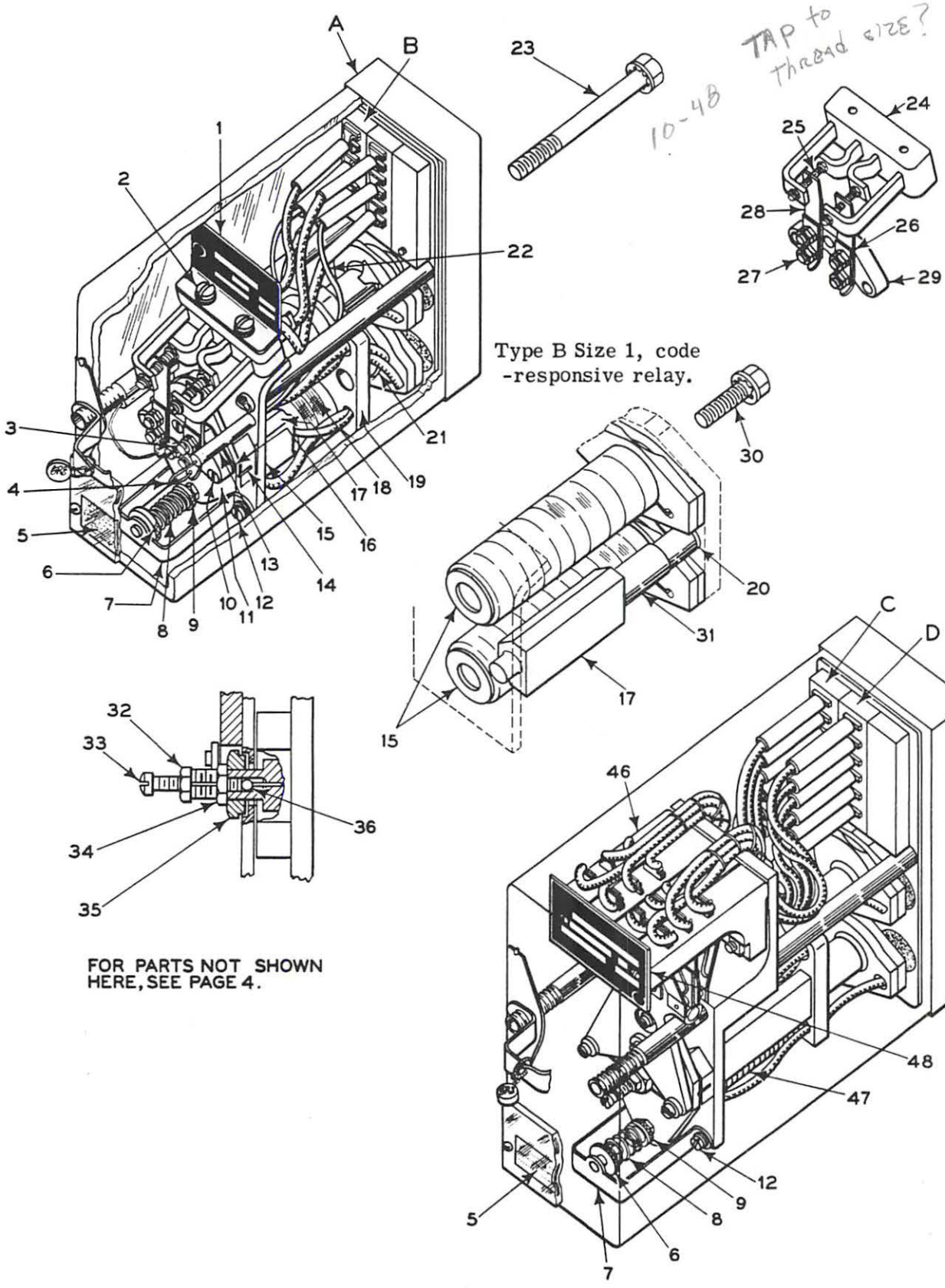
* Give catalog or drawing number of relay when ordering.

Type B, Size 1 Signal-Flasher and Magnetic-Stick Relays

Parts List

For parts not listed here, see page 4.

REF.	NAME	CATALOG NUMBER
42A	TUBING, 7 mm x 1-1/4" long	P62-451
43	SCREW, for cores	P62-181
43A	WASHER, lock, for above	P65-729
44	BUSHING, for cores	P62-206
45	SCREW, for mounting block to bracket	P62-454
45A	WASHER, lock, for above	P62-406



Type B Size 1, code -responsive relay.

FOR PARTS NOT SHOWN HERE, SEE PAGE 4.

Type B Size 1, code-responsive relay.
(Non-bounce contacts)

Type B, Size 1 Code-Responsive Relays

Parts List

For parts not listed here, see page 4.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	BASE COMPLETE, includes tubes for studs	P62-508
*B	CONTACT GROUP COMPLETE	P62-491
*C	CONTACT GROUP COMPLETE, two dependent, for left side of relay	P62-654
*D	CONTACT GROUP COMPLETE, two dependent, for right side of relay	P62-655
1	NAME PLATE	P62-113
2	SCREW, for mounting name plate	P62-219
2A	WASHER, lock, for above	P62-401
3	SCREW, headless, residual, for armature	P62-198
4	CONNECTOR, flexible	P62-327
5	TEST DATA FORM	P62-387
6	NUT, for spring	P62-693
7	SUPPORT, for spring	P62-417
8	SPRING, for armature, for all CR relays except Cat. No. A62-323.	P62-135
8A	As above, except for CR relay Cat. No. A62-323	P62-782
9	SCREW, for spring	P62-340
10	SCREW, for mounting terminal block	P62-440
10A	WASHER, lock, for above	P62-334
11	ARMATURE, only	P62-272
12	SCREW, for fastening support to relay	P62-435
12A	WASHER, lock, for above	P62-402
13	TUBE, for connector	P62-335
14	PLATE, armature bearing	P62-472
15	WASHER, for coils	P62-163
16	PLATE, insulating, for terminal block	P62-274
*17	MAGNET, only	P62-396
18	COIL, top or bottom, .07 ohm	P62-278
18A	As above, except 5 ohms	P62-280
18B	Same as Ref. 18, except 20 ohms	P62-285
18C	Same as Ref. 18, except 30 ohms	P62-549
18D	Same as Ref. 18, except 100 ohms, for CR relay Cat. No. A62-156	P62-694
18E	Same as Ref. 18, except 100 ohms, for CR relay Cat. No. A62-323	P62-785
18F	Same as Ref. 18, except 700 ohms	P62-550
19	YOKE, for relay	P62-153
20	SPRING, for magnets	P62-136
21	BUSHING, for cores	P62-206
22	TUBING, 1 mm x 9" long	P62-731

* Give catalog or drawing number of relay when ordering.

Type B, Size 1 Code-Responsive Relays

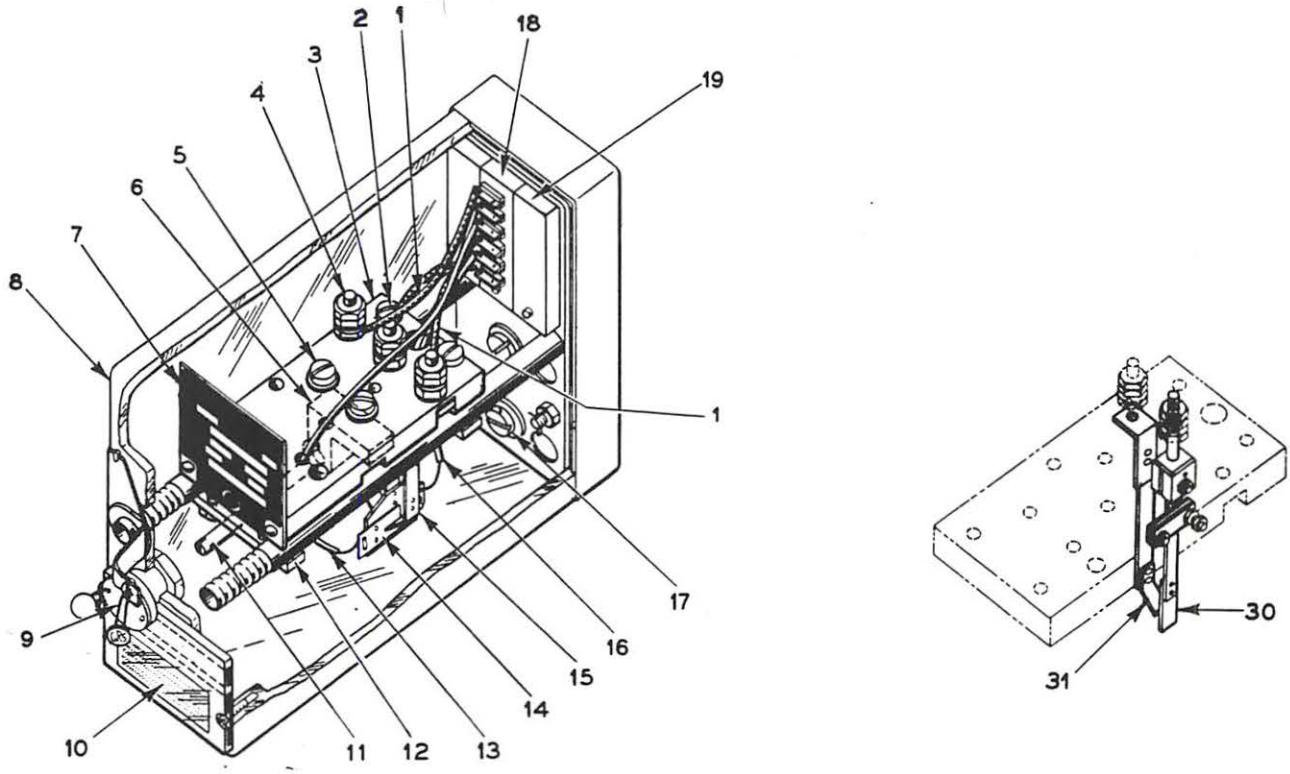
Parts List

For parts not listed here, see page 4

Order by catalog number and name shown in bold type

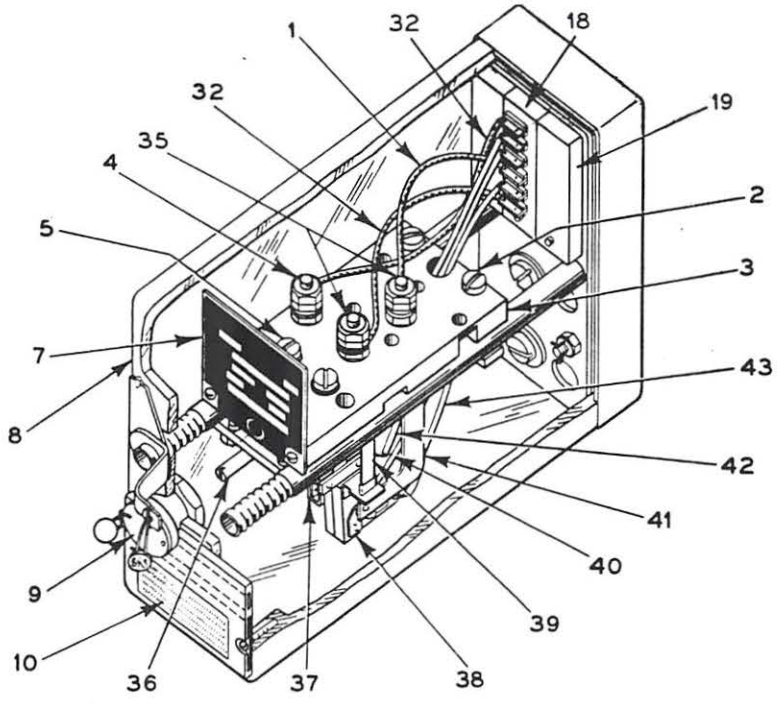
REF.	NAME	CATALOG NUMBER
23	SCREW, for short cores	P62-181
23A	WASHER, lock, for above	P65-729
24	CONTACT BLOCK, with four contact supports molded in place	P62-652
25	CONTACT, only, metal	P62-361
26	PLATE, for contact fingers	P62-467
27	SCREW, for fastening fingers to insulation	P62-456
27A	NUT, for above	P62-183
27B	WASHER, lock, for above	P62-173
28	FINGER, only, with metal contact	P62-421
29	TERMINAL BLOCK	P62-343
30	SCREW, for long cores	P62-180
30A	WASHER, lock, for above	P65-729
31	SPACER, for magnets	P62-306
32	NUT, for screw Ref. 33	P62-183
33	SCREW, for locking armature bearing	P62-454
34	NUT, for screws Refs. 3 and 33	P62-411
35	NUT, for screw Ref. 33	P62-315
36	BALL, for armature	P62-302
46	CONTACT GROUP, includes fingers only	P62-662
47	COIL, top or bottom, 40 ohms	P62-279
47A	As above, except 150 ohms	P62-734
48	NAME PLATE	P62-116
48A	SCREW, for above	P62-419
48B	WASHER, for above	P50-422

Memoranda



Type B Size 1, thermal relay (TJ).

FOR PARTS NOT SHOWN HERE SEE PAGE 4.



Type B Size 1, thermal relay (TG).

Type B, Size 1 Timing Relays (Thermal) Classes TA, TG and TJ

For parts not listed here, see page 4.

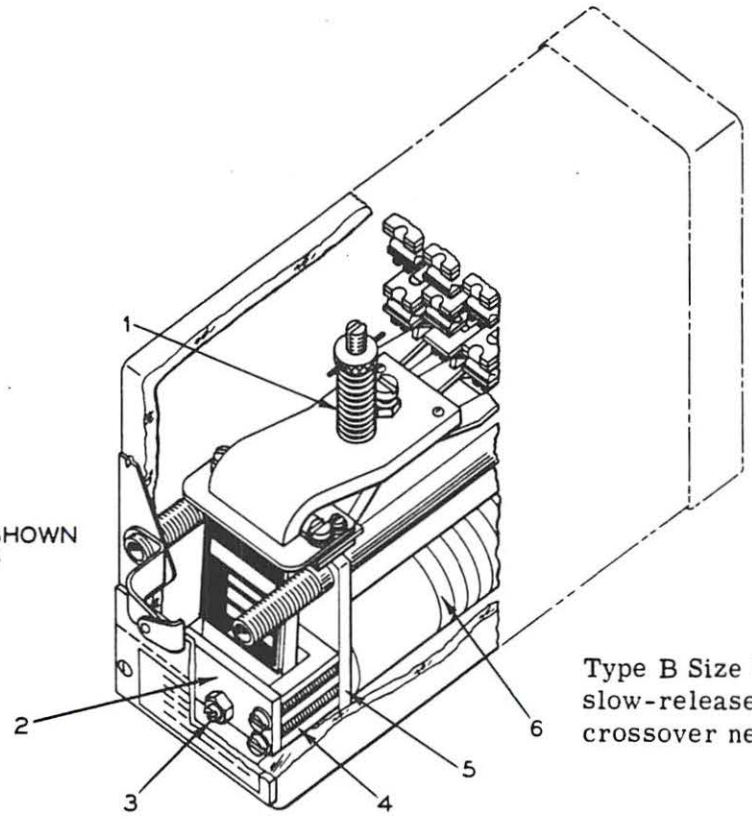
REF.	NAME	CATALOG NUMBER
1	CONNECTOR, 4-1/4" long	P62-323
2	SCREW, for mounting Ref. 3	P62-219
2A	NUT, for above	P76-129
2B	WASHER, lock, for above	P62-401
3	BLOCK, for relay.	P62-622
4	SCREW, for fastening contact fingers to block.	P62-101
4A	NUT, for above	P76-129
4B	WASHER, for above.	P76-247
5	SCREW, for fastening bracket Ref. 6 to block.	P62-216
5A	WASHER, lock, for above	P62-401
6	BRACKET, for adjusting screw	P62-621
7	NAME PLATE	P62-119
7A	SCREW, drive, for above	P62-419
8	COVER, for relays	P62-580
9	COVER COMPLETE, entrance for adjusting relay	P62-617
9A	LOCK NUT, for above	P62-204
10	TEST DATA FORM	P62-392
11	SCREW, adjusting, for Class TJ relay.	P62-620
12	STRAP, for block Ref. 3	P62-372
13	TUBING, 7 3/4" long, for wires	P62-732
14	FINGER COMPLETE, center, for 10 volt operation, for Class TJ relay	P62-368
14A	As above, except for 12 volt operation.	P62-367
15	FINGER COMPLETE, right hand, as shown for Class TJ relay	P62-369
15A	As above, except left hand	P62-365
16	SPAGHETTI, #18 x 5-1/8" long, for wires	P62-732
16A	As above, except 2-7/8" long.	P62-732
17	SCREW, for base	P62-355
17A	NUT, for above	P65-585
17B	WASHER, for above.	P76-108
18	CONTACT GROUP, for relay.	P62-490

Type B, Size 1 Timing Relays (Thermal)
Classes TA, TG and TJ

For parts not listed here, see page 4.

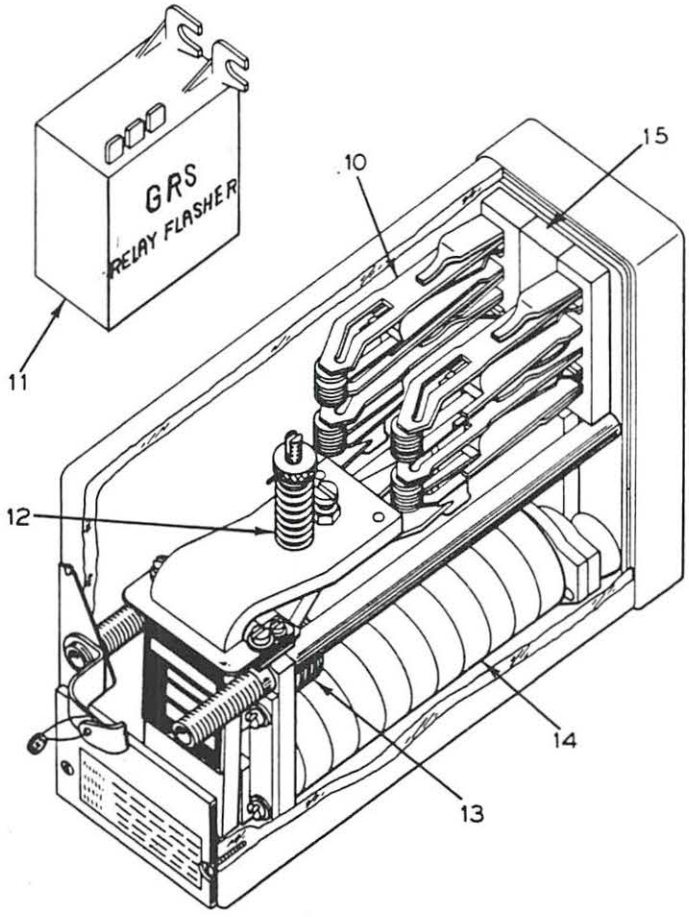
REF.	NAME	CATALOG NUMBER
19	CONTACT GROUP, blank.	P62-477
30	FINGER COMPLETE, for 10 volt operation, for Class TA relay. . .	P62-371
30A	As above, except for 12 volt operation.	P62-370
31	FINGER COMPLETE, for Class TA relay.	P62-366
32	CONNECTOR COMPLETE, 5-3/4" long, for Class TG relay.	P62-326
35	SCREW, for mounting Ref. 41	P62-100
35A	NUT, for above	P76-129
35B	WASHER, lock, for above	P76-247
36	SCREW, adjusting, for Class TG relay	P62-619
37	CONTACT COMPLETE, left hand, for Class TG relay	P62-231
38	FINGER COMPLETE, for 10 volt operation, for Class TG relay. . .	P62-364
38A	As above, except for 12 volt operation.	P62-363
39	FINGER COMPLETE, center, for Class TG relay	P62-362
40	TUBING, 5 1/2" long, for wires	P62-732
41	CONTACT COMPLETE, right hand, for Class TG relay	P62-232
42	TUBING, 4" long, for wires	P62-732
43	TUBING, 5" long, for wires	P62-732

Memoranda



FOR PARTS NOT SHOWN HERE, SEE PAGE 4

Type B Size 1, slow-pickup, slow-release and quick-crossover neutral relay.



FOR PARTS NOT SHOWN HERE, SEE PAGE 4

Type B Size 1, electronically driven highway crossing flasher.

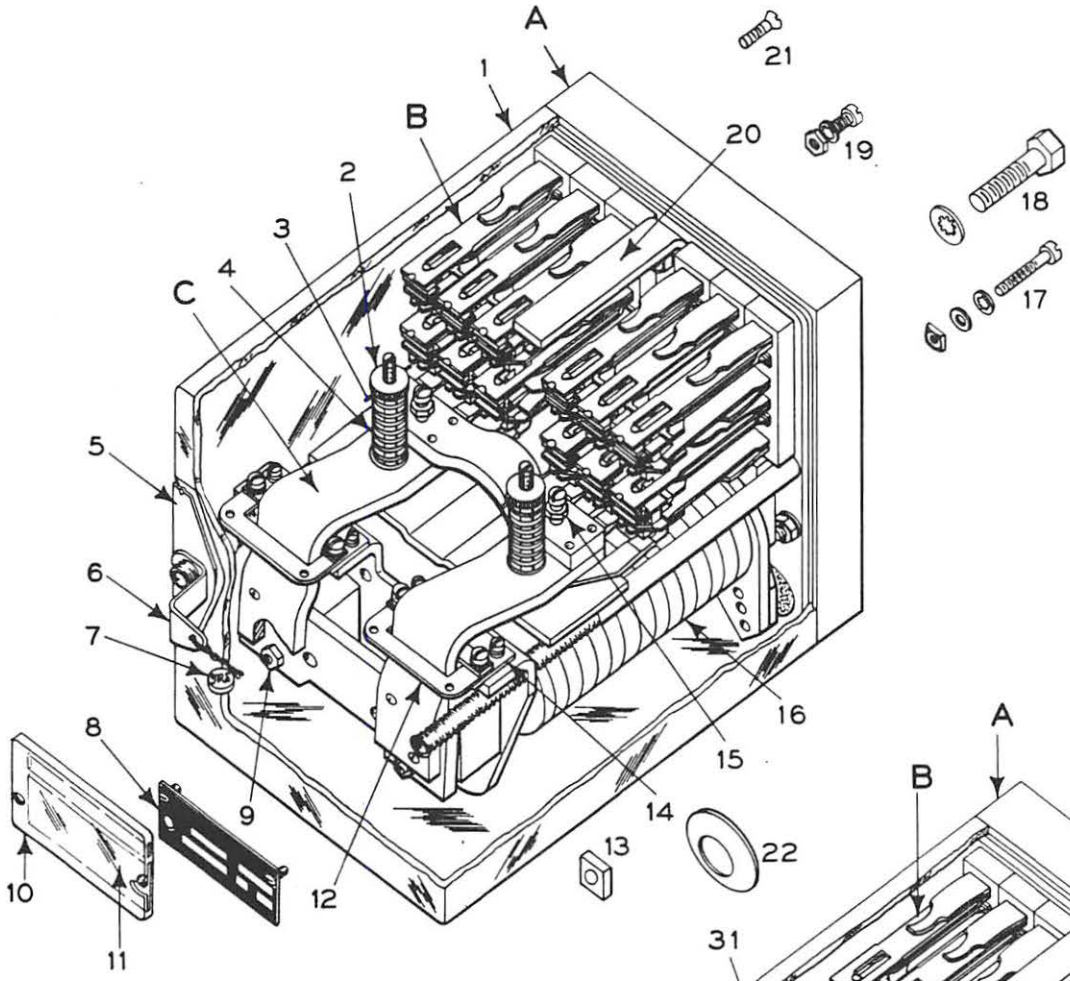
Type B Size 1, Slow-Pickup, Slow-Release and Quick-Crossover Relay and Electronically Driven Highway Crossing Flasher

Parts List

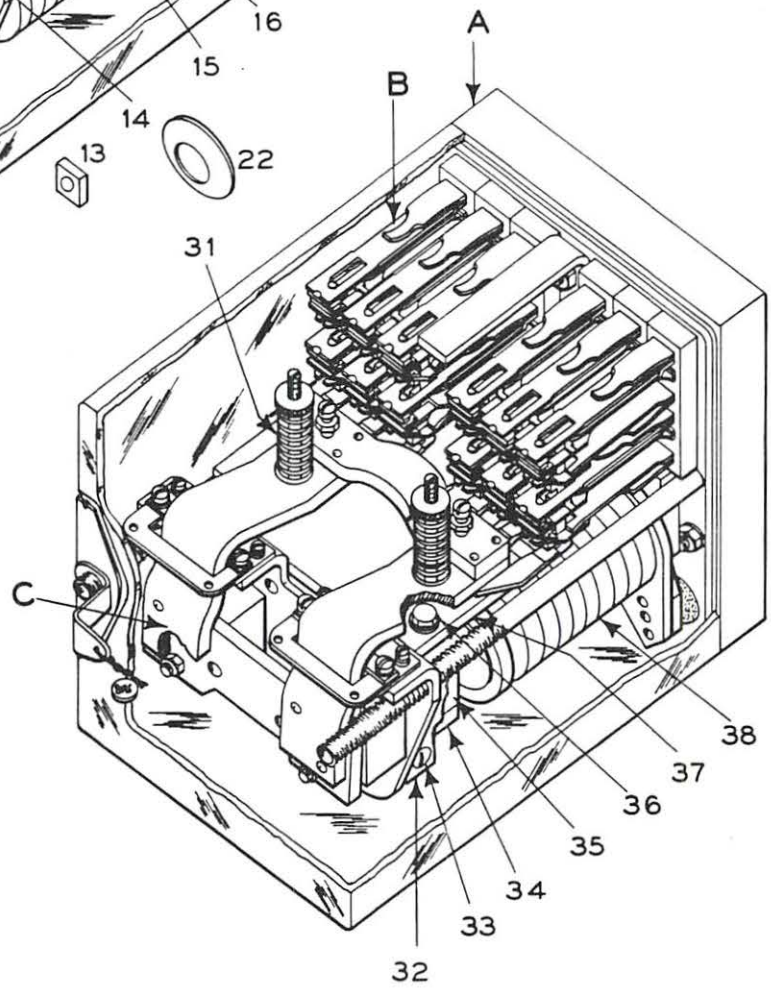
For parts not listed here, see page 4.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	SPRING, for setting back-contact pressure	P62-131
2	YOKE	P62-154
2A	SCREW, for above	P62-453
3	SCREW, stop for armature	P62-198
3A	NUT, for above	P62-410
4	SHUNT STRIP, two required	P62-243
5	SHIM, .002" thick, eight required	P62-413
5A	As above, except .003" thick, eight required	P62-414
5B	Same as Ref. 5, except .010" thick, four required	P62-415
6	COIL, bottom, 124 ohms	P62-531
6A	As above, except 230 ohms	P62-530
10	Contact Group Complete, for references see page 55, Ref. E	P62-500
11	RELAY FLASHER MODULE, electronic, 40-45 flashes per minute, includes modification kit for attaching to relay plugboard	P62-769
11A	As above, except, 56-64 flashes per minute	P62-784
12	SPRING, for setting back-contact pressure	P62-130
13	WASHER, copper	P62-156
13A	CLAMP, for washers	P62-768
14	COIL, 18.0 ohms	P62-770
15	CONTACT Group, blank	P62-477



Type B Size 2, neutral relay.



Type B Size 2, biased-neutral relay.

Type B, Size 2 Neutral Relay and Biased-Neutral Relay

Common Parts List

This list covers repair parts for all Type B, Size 2 relays, except special parts for the following:

Polarized	See page 33
Vane	" " 33
Timing, motor-operated	" " 36
Flasher	" " 36

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
* A	BASE, includes tubes for studs, for all Type B2 relays except polarized, vane, flasher and timing	P62-510
B	CONTACT GROUP, for references see page 54	
* C	ARMATURE, includes top and bottom residual screws and all riveted parts. For all Type B2 relays except polarized and flasher	P62-310
* 1	COVER, for all Type B2 relays except vane and timing relays	P62-640
2	NUT, knurled	P62-142
3	NUT LOCK, for Ref. 2	P62-575
4	SPRING, for setting back-contact pressure	P62-131
5	SPRING, flat, follow-up for nut Ref. 6	P62-236
6	NUT, for holding and sealing cover Ref. 1 in place	P62-578
7	SEAL, for relay	P62-299
* 8	NAME PLATE, for all Type B2 relays except flasher, vane and timing	P62-111
8A	SCREW, for above, for all Type B2 relays except biased-neutral.	P62-442
8B	SCREW, for biased-neutral relay.	P62-695
9	SCREW, residual	P62-476
9A	NUT, for above	P62-182
10	HOLDER, for test data form for all relays except timing	P62-356
10A	SCREW, 1/4" long, for above	P62-593
* 11	TEST DATA FORM, for all relays except polarized, vane, flasher and timing	P62-383
12	PLATE, armature retaining	P62-474
12A	SCREW, for above.	P62-435
12B	WASHER, for above.	P62-261
12C	WASHER, lock, for above	P62-402

Type B, Size 2 Neutral Relay and Biased-Neutral Relay

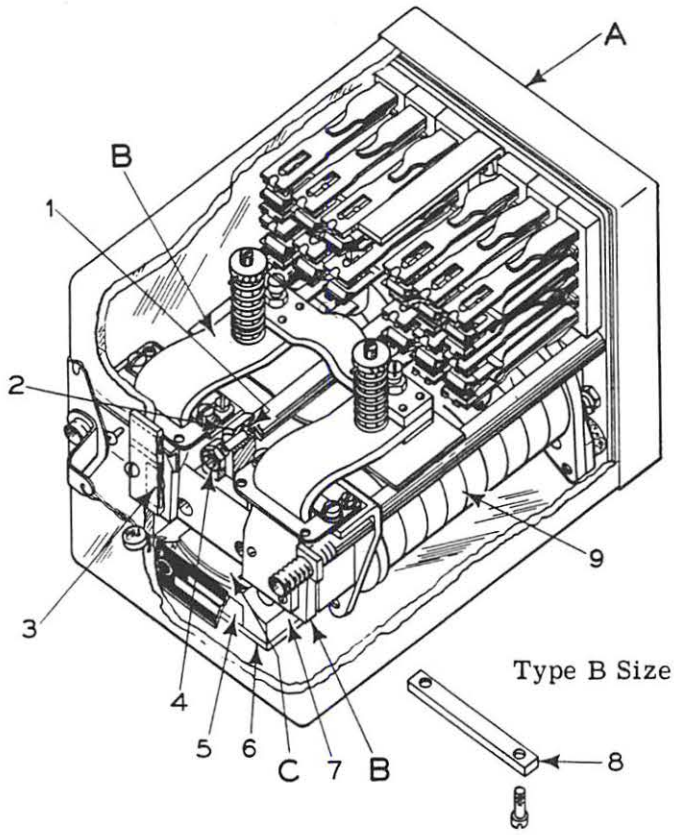
Common Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
13	NUT, for cover	P62-332
14	PLATE, armature bearing	P62-471
14A	SCREW, for above	P62-445
14B	WASHER, lock, for above	P65-730
15	SCREW, for armature	P62-151
15A	NUT, for above	P62-321
16	COIL, right or left hand, 250 ohms	P62-528
16A	As above, except 165 ohms	P62-786
16B	Coil, right or left hand 400 ohms	P62-787
17	SCREW	P62-439
17A	NUT, for above	P62-234
17B	WASHER, lock, for above	P62-402
17C	WASHER, for above	P62-696
18	SCREW, for mounting cores	P62-179
18A	WASHER, for above	P65-729
19	SCREW, for brace	P62-215
19A	NUT, for above	P76-129
19B	WASHER, lock, for above	P62-401
20	BRACE, for cover	P62-168
21	SCREW, for mounting contact blocks	P62-105
22	WASHER, spring, to keep coils tight	P62-159
31	SPRING, for setting back-contact pressure	P62-133
32	BRACKET	P62-672
33	SCREW, for leakage strip	P62-178
33A	WASHER, lock, for above	P62-401
34	LEAKAGE STRIP	P62-674
*35	MAGNET	P62-399
36	SCREW, for support	P62-102
36A	WASHER, lock	P62-401
37	SUPPORT	P62-418
38	COIL, right or left hand, 175 ohms	P62-567

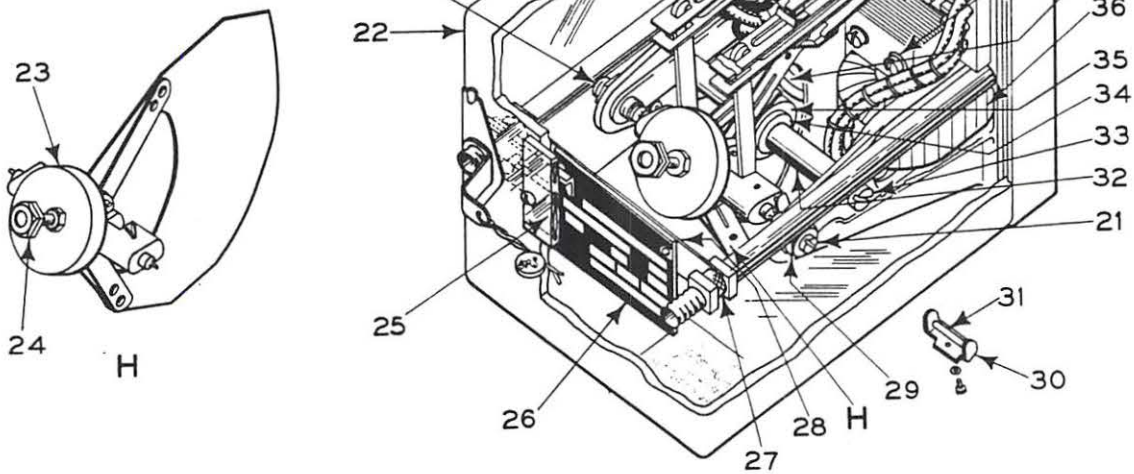
* Give catalog or drawing number of relay when ordering.

Memoranda



Type B Size 2, polarized relay.

FOR PARTS NOT HERE, SEE PAGE 28.



Type B Size 2, a-c vane relay, two position.

Type B, Size 2 Polarized Relay and Vane Relay

Parts List

For parts not listed here, see page 28.

REF.	NAME	CATALOG NUMBER
A	BASE, includes tubes for studs	P62-511
B	ARMATURE, neutral, includes top and bottom residual screws and all riveted parts	P62-309
C	ARMATURE, polar	P62-569
D	BASE, includes tubes for studs	P62-505
E	MAGNET, local, with coil Ref. 37A	P62-375
E1	MAGNET, local, with coil Ref. 37	P62-377
F	CONTACT GROUP, 1F-1B, for vane relay	P62-493
G	MAGNET, track, with coil Ref. 36	P62-376
H	VANE, complete	P62-374
1	BALL	P62-301
2	BRACKET, for polar armature	P62-348
3	TEST DATA FORM	P62-384
4	SCREW, trunnion	P62-177
4A	NUT, for above	P76-129
* 5	MAGNET, permanent	P62-424
6	STRAP, for magnet	P62-373
7	POLE, only	P62-583
8	STRAP, for magnet	P62-697
8A	SCREW, for above	P62-436
8B	WASHER, lock, for above	P62-402
9	COIL, right or left hand, 100 ohms	P62-527
9A	As above, except 250 ohms	P62-528
17	PUSHER, for contact group	P62-461
17A	CLIP, for above	P62-576
18	SPRING, to hold coils on magnet	P62-235
19	NUT, for screw Ref. 33	P62-166
20	WASHER, shim, for nut Ref. 19	P62-152
21	BEARING, for shaft	P62-381
22	COVER, for relay	P62-641
23	WASHER, counterweight, for vane	P62-317

* Give catalog or drawing number of relay when ordering.

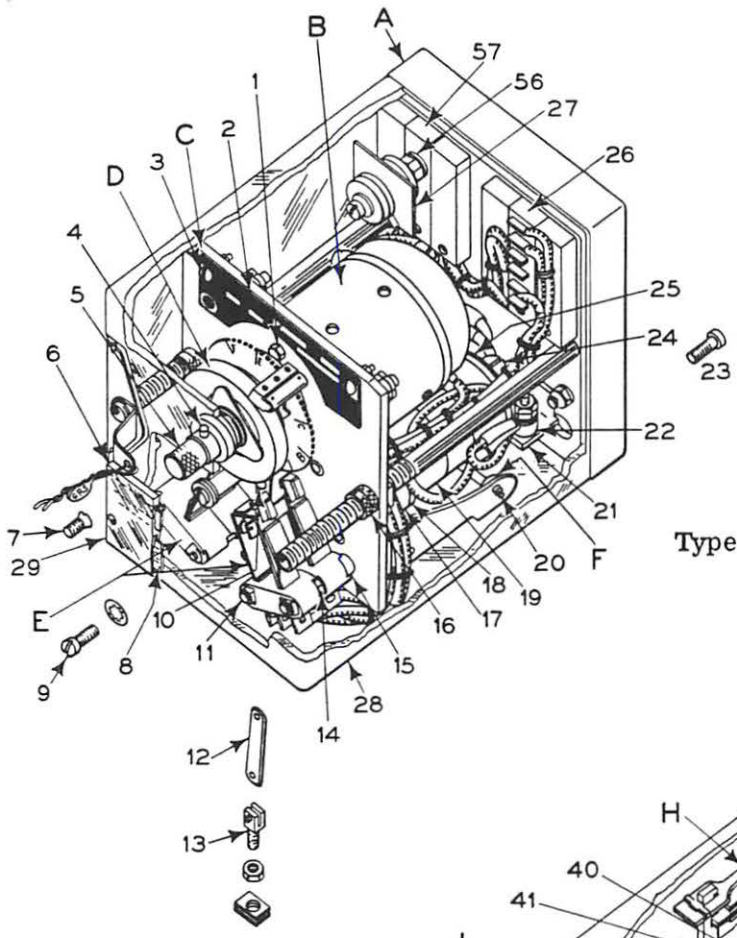
Type B, Size 2 Polarized Relay and Vane Relay

Parts List

For parts not listed here, see page 28

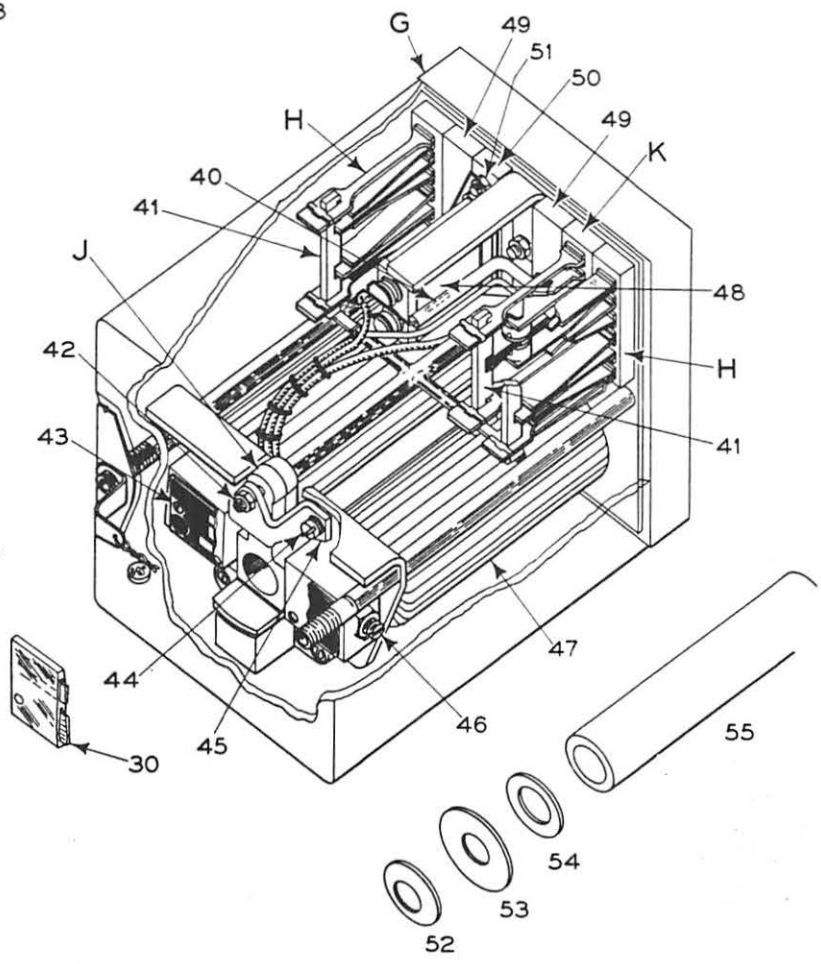
REF.	NAME	CATALOG NUMBER
24	NUT, for counterweight	P62-127
25	TEST DATA FORM	P62-382
26	NAME PLATE	P62-117
26A	PIN, for above	P62-318
27	NUT, spanner	P62-143
28	BRACKET, for name plate	P62-350
29	NUT, for bearing	P62-222
30	CLIP, for pins	P62-246
30A	SCREW, for above	P62-443
30B	WASHER, lock, for above	P62-408
31	PIN, for operating pushers	P62-126
32	SPACER, for stop Ref. 35	P62-352
33	SCREW, for stop	P62-447
34	SPACER, for stop	P62-353
34A	WASHER, for above	P62-698
35	STOP, resilient, for vane	P62-597
36	COIL, for track magnet, 0.52 ohms, for 50/60 cycles	P62-380
37	COIL, for local magnet, 166 ohms, series connected, for 50 cycles	P62-379
37A	COIL, for local magnet, 144 ohms, series connected, for 60 cycles	P62-378
38	SCREW, for fastening magnets to base	P62-267
38A	WASHER, lock, for above	P62-402
39	CONTACT GROUP, blank	P62-700
40	CONTACT GROUP	P62-699

Memoranda



FOR PARTS NOT SHOWN HERE, SEE PAGE 28

Type B2, timing relay.



Type B2, flasher relay.

Type B, Size 2 Flasher Relay and Motor-Operated Timing Relay

Parts List

For parts not listed here, see page 28

REF.	NAME	CATALOG NUMBER
A	BASE, includes tubes for studs	P62-512
B	MOTOR, with gear train, for 8-volt operation, timing 4 seconds to 64 seconds	P62-585
B1	As above, except for 1 minute to 8 minutes	P62-584
B2	MOTOR, with gear train, for 10-volt operation, timing 4 seconds to 64 seconds	P62-587
B3	As above, except for 1 minute to 8 minutes	P62-586
B4	MOTOR, with gear train, for 12-volt operation, timing 4 seconds to 64 seconds	P62-590
B5	As above, except for 1 minute to 8 minutes	P62-589
C	PLATE, for references see page 40	
D	TIMER, for references see page 40	
E	CONTACT GROUP, for references see page 40	
F	ARMATURE, for references see page 40	
G	BASE, includes tubes for studs	P62-509
H	CONTACT GROUP, two dependent front-back	P62-503
J	ARMATURE, includes all riveted parts	P62-570
K	CONTACT GROUP, magnetic toggle	P62-502
1	SCREW	P62-701
1A	NUT, for above	P62-183
2	NAME PLATE, for relay with one check contact	P62-114
2A	NAME PLATE, for relay with two check contacts	P62-118
3	SCREW, for name plate	P73-137
3A	NUT, for above	P62-187
3B	WASHER, lock, for above	P62-402
4	PIN, sealing	P62-121
5	KNOB, adjusting	P62-354
6	HOLDER, for test data form	P62-356
6A	SCREW, for above, 5/16" long	P62-595
6B	SCREW, for above, 1/4" long	P62-594

Type B, Size 2 Flasher Relay and Motor-Operated Timing Relay

Parts List

For parts not listed here, see page 28

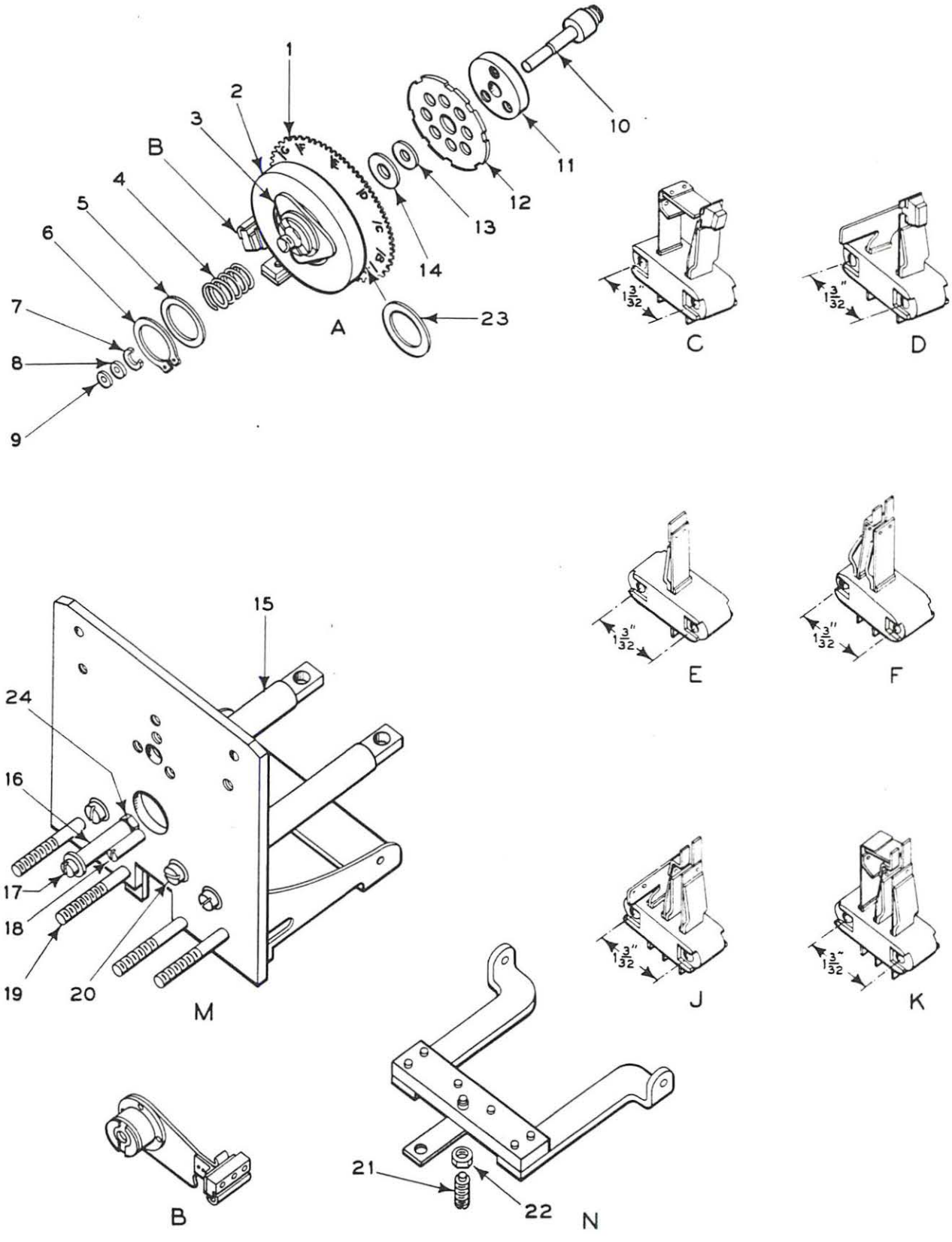
REF.	NAME	CATALOG NUMBER
7	SCREW, for mounting timer	P62-702
8	TEST FORM DATA, for timing relay	P62-386
9	SCREW, for mounting motor	P62-188
9A	WASHER, lock, for above	P62-406
10	PIN, for link	P62-314
10A	WASHER, for above	P62-138
10B	WASHER, split for above, four required	P62-291
11	NUT, for stud on contact groups	P62-187
11A	WASHER, lock, for above	P62-172
12	LINK, for armature	P62-304
13	SCREW, for armature	P62-648
13A	NUT, for above	P65-150
13B	WASHER, lock, for above	P62-171
14	NUT, for contact groups	P62-187
15	SPACER, for contact groups	P62-351
16	NUT, spanner, for studs	P62-143
17	SLUG, copper	P62-429
18	WASHER, felt, for coils	P62-169
19	COIL, right or left hand, 200 ohms	P62-284
20	PIN, hinge, for armature	P62-125
20A	TUBE, for above	P62-269
20B	WASHER, for above	P62-138
21	BRACE, for supporting back end of core	P62-703
22	INSULATOR, for rectifier and coil connections	P62-330
22A	NUT, for above	P76-129
22B	WASHER, for above	P62-196
23	SCREW, for brace, Ref. 21	P65-828
23A	WASHER, lock , for above	P62-402
24	SCREW, for cores	P62-446
25	WASHER, fibre, for coils	P62-293

Type B, Size 2 Flasher Relay and Motor-Operated Timing Relay

Parts List

For parts not listed here, see page 28

REF.	NAME	CATALOG NUMBER
26	CONTACT GROUP, with terminals	P62-490
27	RECTIFIER, Type S 1/4, selenium	A53-365
28	COVER, for timing relay	P62-650
29	HOLDER, for test data form	P62-356
30	TEST DATA FORM, for flasher relay	P62-385
40	RESISTOR	P62-252
41	PUSHER, for contact group	P62-704
41A	CLIP, for above, two required	P62-577
42	SCREW, trunnion	P62-705
42A	NUT, for above	P76-129
43	NAME PLATE	P62-120
43A	SCREW, for above	P62-444
43B	WASHER, lock, for above	P62-404
44	SCREW, for bracket	P62-435
44A	WASHER, lock, for above	P62-402
45	PIN, ROLL, for bracket	P62-239
46	SCREW, stop	P62-253
46A	NUT, for above	P62-223
47	COIL, right or left hand, 136 ohms	P62-289
47A	COIL, right or left hand, 87 ohms	P62-290
48	CAPACITOR, 1.0 mfd	P62-393
49	CONTACT GROUP, blank	P62-477
50	CONTACT GROUP, blank, with holes for mounting capacitor	P62-478
51	SCREW, for mounting capacitor	P62-106
51A	NUT, for above	P62-183
51B	WASHER, lock, for above	P62-406
52	WASHER, spring, to keep coil tight	P62-158
53	WASHER, fibre, for coils	P62-292
54	WASHER, copper	P62-155
55	SLUG, copper	P62-430
56	WASHER, lock, for rectifier	P76-145
57	CONTACT GROUP, blank, with tapped hole for mounting rectifier	P62-773



Type B Size 2, timing relay.

Type B, Size 2 Timing Relay

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	TIMER COMPLETE, for relay with one check contact	P62-644
A1	As above, except for relay with two check contacts.	P62-645
B	ADJUSTER COMPLETE, for relay with one check contact	P62-646
B1	As above, except for relay with two check contacts.	P62-647
C	CONTACT GROUP, front, timing, for relay with one check contact (See note below)	P62-632
D	CONTACT GROUP, rear, timing, for relays with one check contact (See note below)	P62-631
	Note - If contact groups are required for old style relays, one each of Refs. C and D must be ordered.	
E	CONTACT GROUP, check, for relays with one check contact	P62-627
F	CONTACT GROUP, check, for relays with two check contacts. . . .	P62-630
J	CONTACT GROUP, timing, rear, new style with 1-3/32" mounting centers, for relays with two check contacts	P62-634
K	CONTACT GROUP, timing, front, new style with 1-3/32" mounting centers, for relays with two check contacts	P62-633
M	PLATE COMPLETE, with cores and bracket.	P62-635
M1	As above, except without cores and bracket.	P62-772
N	ARMATURE COMPLETE	P62-638
1	GEAR COMPLETE, for timer, includes gear, hub, contact, ring, cup all riveted together, for relays with one check contact.	P62-649
1A	As above, except for relays with two check contacts	P62-707
2	FLYWHEEL, for timer	P62-637
3	WASHER, spring, for flywheel	P62-303
4	SPRING, for timer.	P62-134
5	WASHER, flat, for ring, Ref. 6.	P62-258
6	RING, for hub	P62-202
7	RING, retaining, for hub	P62-140
8	WASHER, for use behind shim, Ref. 9	P62-345
9	WASHER, shim, .005" thick, for end of shaft	P62-161
9A	As above, except .010" thick	P62-162
10	SHAFT, for timer	P62-344

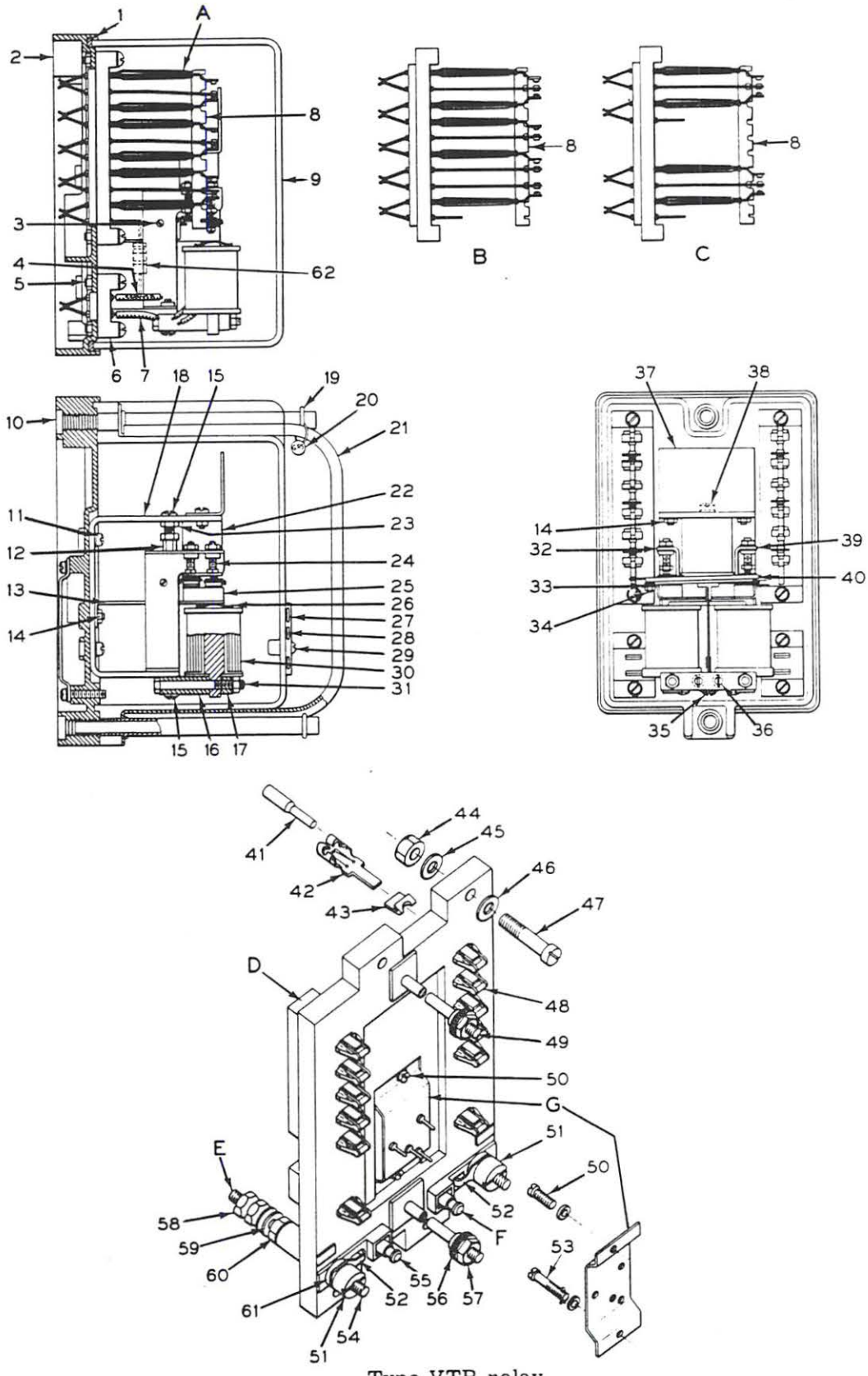
Type B, Size 2 Timing Relay

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
11	WASHER, for mounting timer	P62-639
12	DISC, for timer	P62-294
13	WASHER, for gear	P62-185
14	WASHER, for gear	P62-197
15	CORE, for relay	P62-271
16	BUSHING, for stop	P62-708
17	SCREW	P62-709
17A	WASHER, for above	P62-710
18	STUD	P62-711
19	STUD, for supporting contacts	P62-145
20	SCREW, for fastening cores and bracket to plate	P62-214
20A	WASHER, lock, for above	P62-401
21	SCREW, headless, for armature	P62-199
22	NUT, for screw, Ref. 21	P76-129
23	WASHER, nylon, for gear Ref. 1	P62-771
24	NUT, for screw Ref. 17	P65-304

Memoranda



Type VTB relay.

Type VTB Relay

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	CONTACT GROUP, three dependent front and back metal contacts . .	P62-499
B	CONTACT GROUP, one dependent front back, two dependent fronts and one dependent back metal contacts	P62-497
B1	As above, except with one dependent front back, one dependent front and one dependent back metal contacts	P62-760
C	CONTACT GROUP, two dependent front and back metal contacts . . .	P62-498
D	PLUGBOARD KIT, includes plugboard, relay mounting studs, terminals, current and voltage test posts and mounting hardware . .	A62-510
E	CURRENT TEST POST COMPLETE, includes Refs. 1-51, 1-52, 1-54, 2-58, 3-59, 1-60 and 1-61	P62-328
F	VOLTAGE TEST POST COMPLETE, includes Refs. 1-55, 2-58, 3-59, and 1-60	P62-329
G	REGISTRATION PLATE ASSEMBLY, includes male and female plates and mounting hardware. When ordering give catalog or drawing number of relay	P62-667
1	GASKET, for cover	P62-230
2	BASE, for relay	P62-574
3	SCREW, for brackets.	P62-759
3A	WASHER, lock, for above	P65-730
4	TERMINAL	P62-431
5	SCREW, for mounting contact blocks	P62-175
5A	NUT, for above	P62-186
5B	WASHER, lock, for above.	P62-402
6	CONTACT GROUP, for coil connections	P62-496
7	SLEEVING, for coil connections	P62-450
8	PUSHER, for contact groups, has slot in back edge for right-hand contact group on double armature relays	P62-465
8A	As above, except has slot in front edge, for single armature relays and for left-hand contact group on double armature relays.	P62-464
8B	CLIP, for above, two required	P62-577
9	COVER, for relay.	P62-581
10	BUSHING, for tube	P62-754
11	SCREW, for mounting frame	P62-266
11A	NUT, for above	P62-186
11B	WASHER, lock, for above.	P62-402
12	SPACER	P62-755
13	BRACKET COMPLETE	P62-746
14	SCREW, for mounting bracket and name plate	P85-464
14A	NUT, for above	P65-498

Type VTB Relay

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
14B	WASHER, lock, for above	P62-406
15	SCREW, for spacer	P65-208
16	BLOCK, for cores, for double-armature relays	P62-758
17	YOKE, for cores	P62-740
18	FRAME, only	P62-748
19	TUBE, for fastening relay to plugboard	P62-270
20	SEAL	P62-299
21	HANDLE, for relay	P62-319
* 22	MAGNET	P62-756
23	NUT, for screw Ref. 15	P76-129
24	SCREW, contact	P62-211
24A	NUT, for above.	P62-186
24B	WASHER, lock, for above	P62-402
25	CORE, for double-armature relay.	P62-750
25A	As above, except for single-armature relay	P62-749
26	SPRING, pressure, for coils	P62-233
27	HOLDER, for test data form	P62-356
28	FORM, test data	P62-391
29	SCREW, 1/4" long, for holder	P62-594
30	COIL, right or left hand, 0.10 ohms	P62-687
30A	As above, except 0.12 ohms	P62-686
30B	Same as Ref. 30, except 2.0 ohms	P62-764
30C	Same as Ref. 30, except 4.0 ohms	P62-763
30D	Same as Ref. 30, except 17.0 ohms	P62-688
30E	Same as Ref. 30, except 100.0 ohms	P62-689
31	SCREW, for block and yoke	P62-743
31A	NUT, for above	P62-741
31B	WASHER, lock, for above	P62-401
32	BRACKET, left-hand	P62-744
33	PLATE, clamping	P62-747
34	SCREW, for plate	P62-445
34A	NUT, for above	P62-765
34B	WASHER, lock, for above	P65-730
35	SCREW, for block	P62-175

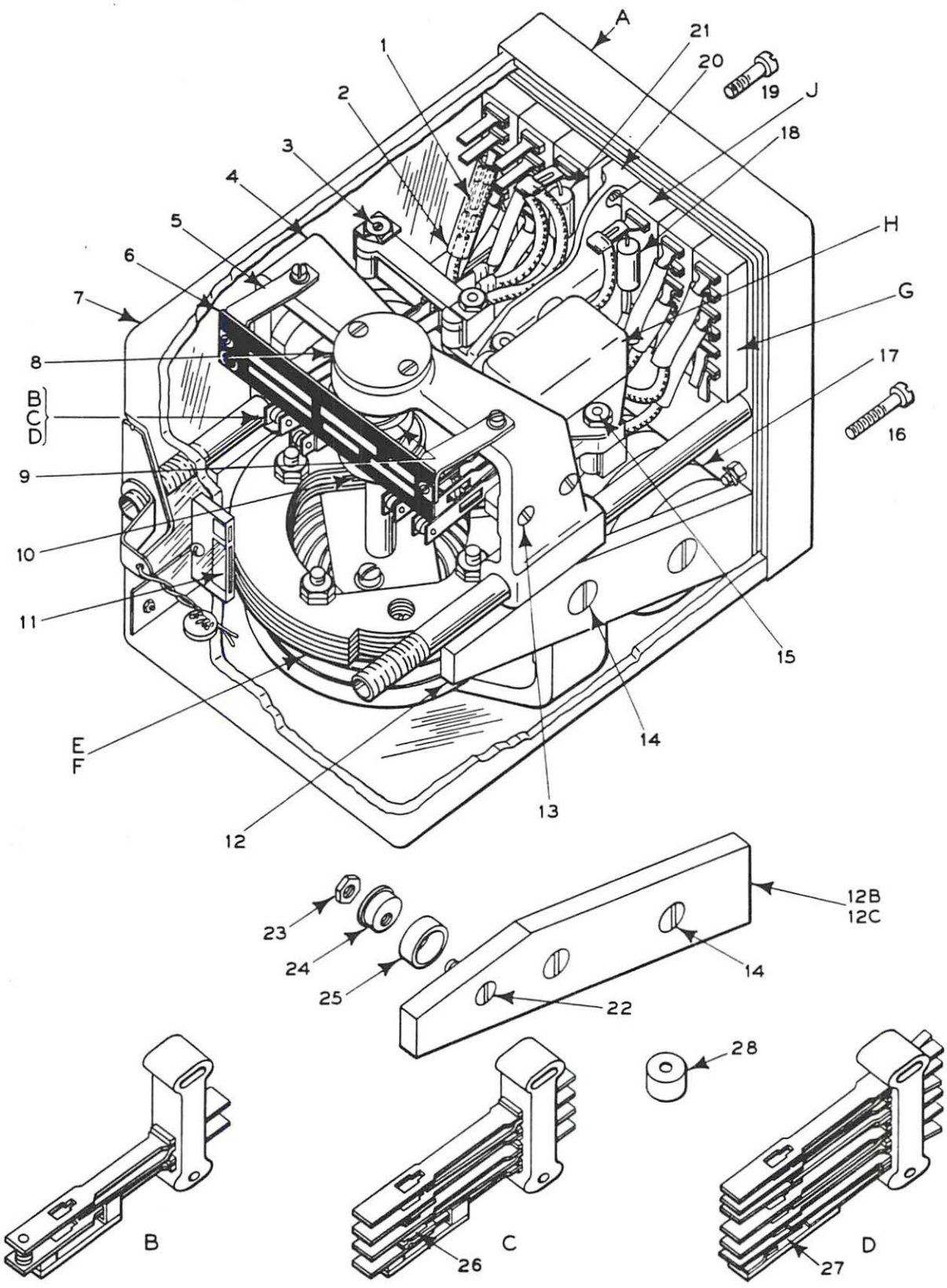
* Give catalog or drawing number of relay.

Type VTB Relay

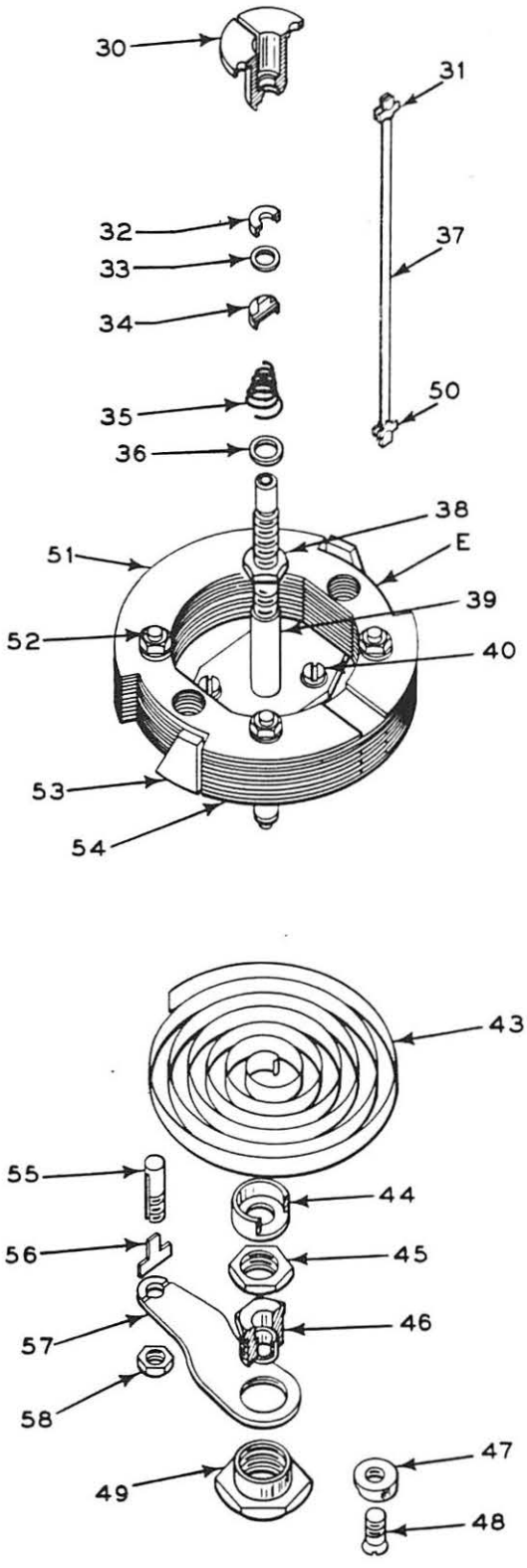
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
35A	WASHER, lock, for above	P62-402
36	SCREW, for armature	P62-753
37	NAME PLATE	P62-115
38	SCREW, for supporting magnet	P62-742
38A	NUT, for above.	P62-751
38B	WASHER, lock, for above	P62-401
39	BRACKET, right-hand.	P62-745
40	ARMATURE COMPLETE	P62-245
41	SLEEVE, moulded rubber, used with No. 10 wire on plugboard	P62-298
42	TERMINAL, only, two required per insulator	P62-466
43	CLIP, for locking insulator in plugboard	P62-305
44	NUT, for screw Ref. 47	P62-167
45	WASHER, lock, for nut Ref. 44	P62-148
46	WASHER, for screw Ref. 47.	P85-50
47	SCREW, for mounting plugboard, four required per plugboard.	P62-448
48	INSULATOR, for plugboard	P62-457
49	STUD, for plugboard.	P62-347
49A	NUT, lock, for above	P62-320
49B	WASHER, for above	P50-157
50	SCREW, for fastening registration plates to relay and plugboard	P62-266
50A	WASHER, lock, for above	P62-402
51	NUT, for current test posts	P62-129
52	CONNECTOR, for current test posts	P62-191
53	SCREW, for fastening plate Ref. G to relay.	P62-268
53A	WASHER, lock, for above	P62-402
54	SCREW, used as current test post.	P62-108
55	SCREW, used as voltage test post.	P62-109
56	NUT, for fastening relay to plugboard.	P62-144
57	NUT, for locking nut Ref. 56	P62-166
58	NUT, for test posts	P76-131
59	WASHER, for test posts	P76-108
60	NUT, for test posts	P62-333
61	BUSHING, insulating, for connectors	P62-203
62	RESISTOR, 18 ohms	P62-762



Type B, Size 2 code transmitter.



Type B, Size 2 code transmitter.

Type B, Size 2 Code Transmitter

Parts List

For parts not listed here, see page 28

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**BASE**, includes tubes for studs, for transmitters with ribbon suspended rotor	P62-513
A1	As above, except for transmitters with solid suspended rotor	P62-514
B	**CONTACT GROUP**, coil, 1F contact	P62-599
C	**CONTACT GROUP**, 1F and 1B, has contacts for up to 30 volts	P62-600
C1	As above, except has contacts for 30 volts and up	P62-601
D	**CONTACT GROUP**, 2FB contacts	P62-602
E	**ROTOR COMPLETE**, ribbon suspended, 75 rate	P62-612
E1	As above, except 120 rate	P62-613
E2	Same as Ref. E, except 180 rate	P62-614
F	**ROTOR COMPLETE**, solid suspended, 270 rate	P62-615
F1	As above, except 333-1/3 rate	P62-616
G	**CONTACT GROUP**, with soldering lugs	P62-491
H	**CONDENSOR**, arc suppression	P62-598
J	**BLOCK**, for mounting resistor	P62-636
1	**TERMINAL**, wire	P62-431
2	**SLEEVING**, 5 mm x 1-1/4" long	P62-450
3	**SCREW**, 2" long, for mounting contact blocks	P62-265
3A	As above, except 1-5/8" long	P62-264
3B	**NUT**, for above	P62-184
3C	**WASHER**, lock, for above	P62-170
4	**FRAME**	P62-651
5	**BRACKET**, for holding name plate	P62-349
5A	**SCREW**, for above	P62-189
5B	**WASHER**, lock, for above	P62-406
6	**NAME PLATE**	P62-112
6A	**SCREW**, for above	P62-419
7	**COVER**, with bar, for transmitters with ribbon suspended rotors	P62-643
7A	As above, except for transmitters with solid suspended rotors	P62-640
8	**COVER**, for bearing	P62-248
8A	**SCREW**, for above	P62-104

Type B, Size 2 Code Transmitter

Parts List

For parts not listed here, see page 28

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
9	CAM, upper, for Ref. A	P62-666
10	CAM, lower, for Ref. A and upper for Ref. A1	P62-665
11	TEST DATA FORM	P62-389
12	POLE, left-hand, for Ref. A	P62-605
12A	As above, except right-hand.	P62-606
12B	Same as Ref. 12, except left-hand for Ref. A1.	P62-607
12C	Same as Ref. 12B except right-hand	P62-713
13	SCREW, for fastening bracket Ref. 20 to frame	P62-297
14	SCREW, for fastening pole to frame	P62-455
15	SCREW, headless, 1-3/16" long, for mounting contact blocks.	P62-263
15A	NUT, for above	P62-184
15B	WASHER, lock, for above	P62-170
16	SCREW, for fastening poles to base.	P62-216
16A	WASHER, lock, for above	P62-401
17	COIL, 150 ohms resistance	P62-286
17A	As above, except 105 ohms resistance	P62-287
17B	Same as Ref. 17, except 5.5 ohms resistance	P62-288
18	RESISTOR, 150 ohms	P62-685
19	SCREW, for fastening bracket to base	P62-214
20	BRACKET, for holding contact blocks	P62-416
21	RESISTOR, 1000 ohms, used in multiple with coil, for arc suppression	P62-714
22	SCREW, for stop.	P50-431
23	NUT, for screw Ref. 22.	P76-129
24	STOP.	P62-237
25	BUSHING.	P62-209
26	PUSHER, for contact group Ref. C	P62-716
27	PUSHER, for contact group Ref. D	P62-717
28	BUSHING, for contact groups	P62-210
30	BEARING, upper.	P62-609
31	PLATE, clamping, upper, for ribbon.	P62-469

Type B, Size 2 Code Transmitter

Parts List

For parts not listed here, see page 28

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
32	WASHER, shim, .050" thick	P62-715
33	WASHER, shim, .005" thick	P62-146
33A	As above, except .008" thick	P62-147
34	GUIDE, for spring	P62-247
35	SPRING, for upper bearing	P62-359
36	WASHER, .020" thick	P62-164
37	RIBBON	P62-256
38	NUT, for locking cams in place	P62-221
39	ROTOR, with shaft, hub and roll-pin	P62-603
39A	ROLL PIN, for above	P62-238
40	SCREW, for fastening base ring and armature to hub	P62-218
40A	WASHER, lock, for above	P62-401
43	SPRING, for rotor	P62-295
44	WASHER, cup, for nut	P62-257
45	NUT, for holding spring on rotor	P62-205
46	BEARING, lower	P62-608
47	CLAMP	P62-423
48	SCREW, for clamp	P62-176
49	NUT, for lower bearing	P62-316
50	PLATE, clamping, lower, for ribbon	P62-468
51	RING, weight, 1/16" thick, eight required for 75 rate transmitter	P62-336
51A	As above, except 1/32" thick, one required for 75 rate transmitter and four required for 120 rate transmitter	P62-338
52	SCREW, 7/8" long, for fastening rings to armature, for 75 rate transmitter	P62-217
52A	NUT, for above	P76-129
52B	WASHER, for above	P76-247
52C	WASHER, lock, for above	P62-401
53	ARMATURE	P62-625
54	RING, base, one required	P62-337

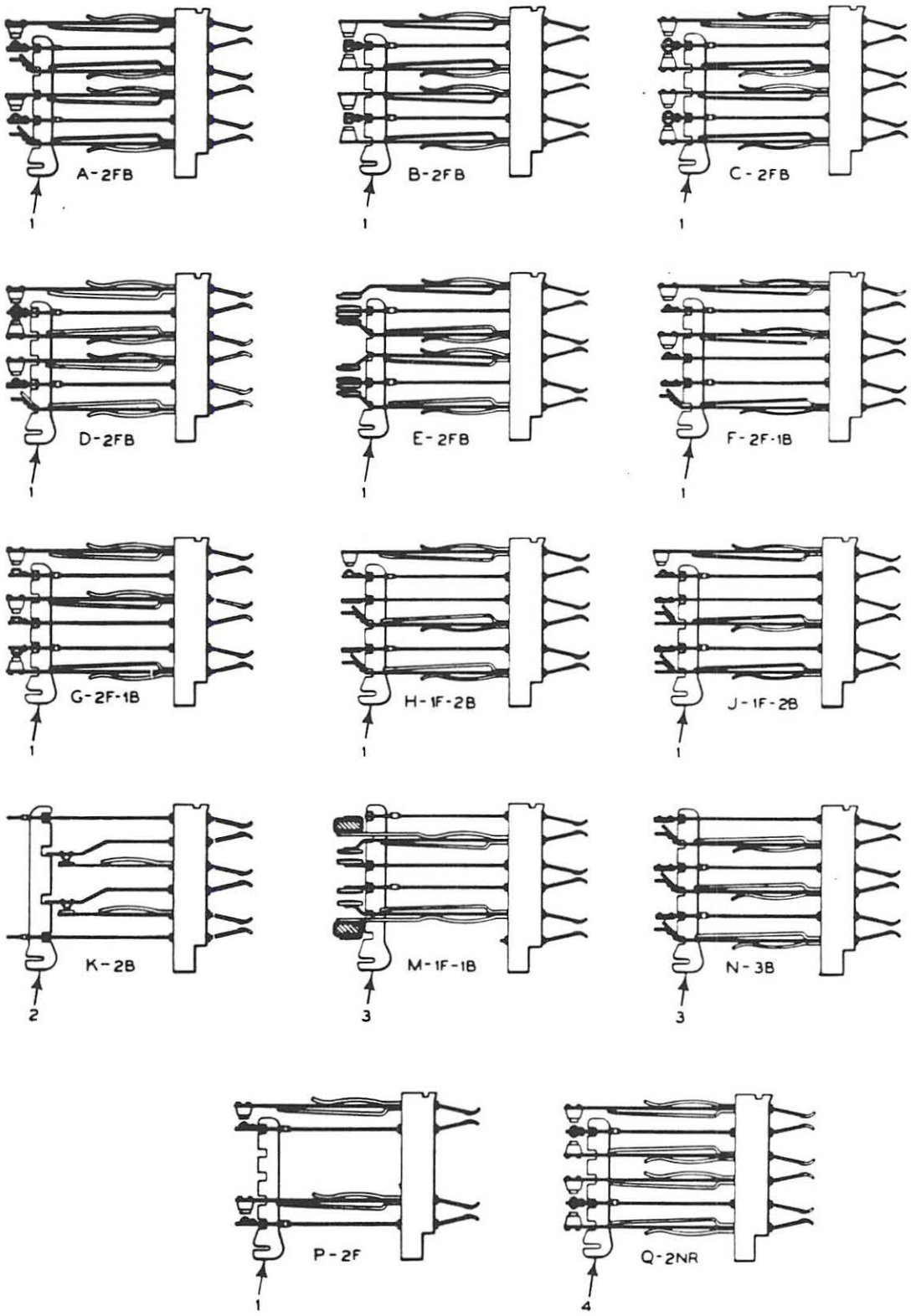
Type B, Size 2 Code Transmitter

Parts List

For parts not listed here, see page 28

REF.	NAME	CATALOG NUMBER
55	STUD, for fastening stationary end of spring to arm	P62-254
56	STOP, for fastening end of spring on stud	P62-308
57	ARM, for stud and stop	P62-422
58	NUT, for stud Ref. 55	P62-165
59	BEARING, upper	P62-610
60	SHAFT, for rotor	P62-604
61	NUT, for shaft	P62-221
61A	WASHER, for above	P62-718
62	SCREW, for fastening plate and armature to hub	P62-214
62A	WASHER, lock, for above	P62-401
63	PLATE, 1/8" thick	P62-275
64	WEIGHT, for 270 rate code transmitter	P62-240
64A	As above, except for 333-1/3 rate code transmitter	P62-241
65	SPRING, for rotor	P62-296
66	BEARING, lower	P62-611
67	SEAT, upper, for spring	P62-591
68	SPRING, for rotor	P62-137
69	SEAT, lower, for spring	P62-592
70	WASHER, for lower spring seat	P62-122
71	ARMATURE	P62-626
72	HUB	P62-624
73	ARM, for stud	P62-719

57092
11 GR1



Contact groups.

Contact Groups for Type B Relays

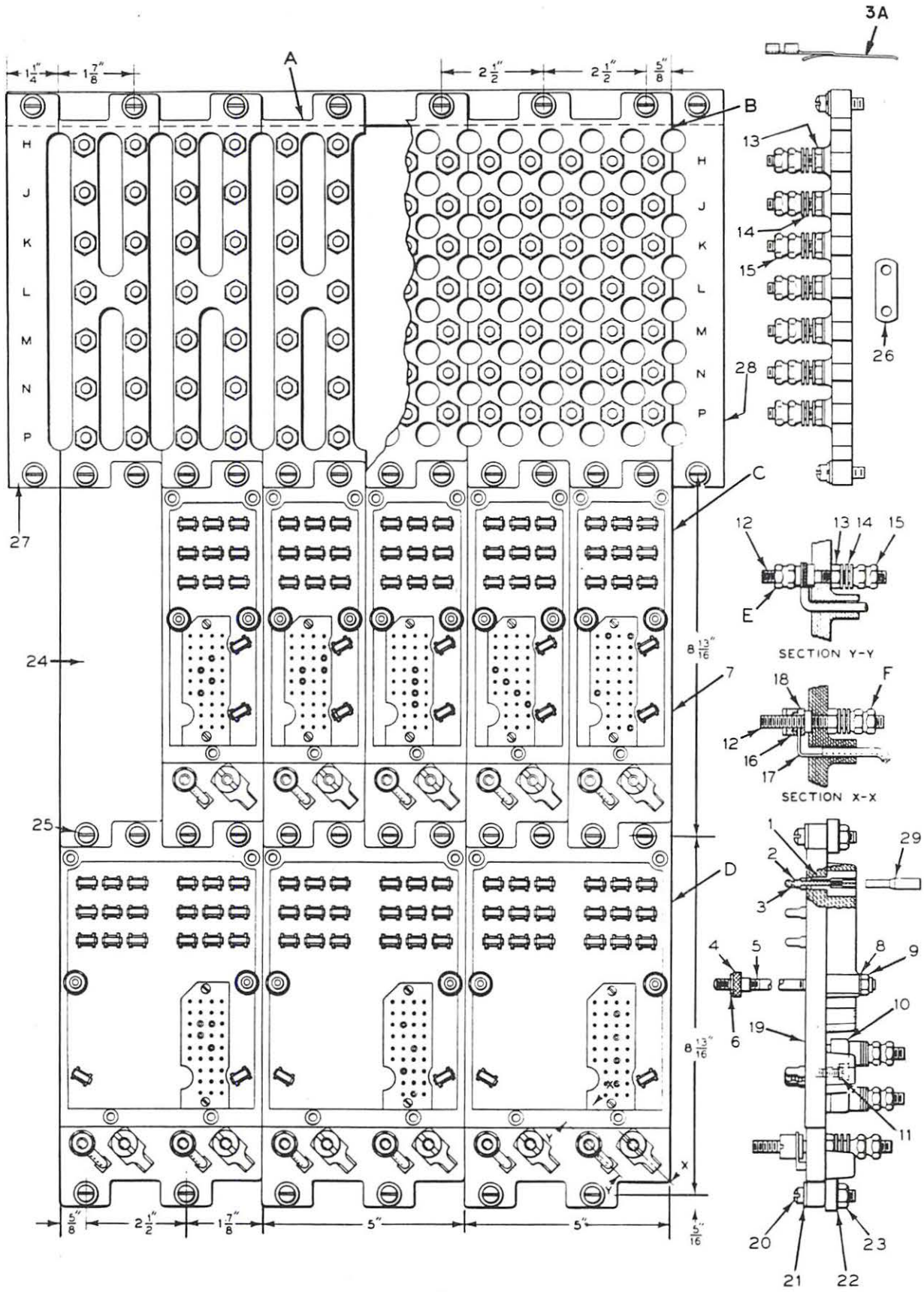
To order, specify "Contact Group" and give catalog number

REF.	CONTACT COMBINATION	CONTACT MATERIAL		CATALOG NUMBER
		FRONT	BACK	
A	2FB	C to M	M to M	P62-484
B	"	C to M (HD)	M to M (HD)	P62-488
C	"	M to M	M to M	P62-487
D	"	M to M (upper) C to M (lower)	M to M M to M	P62-486
E	"	M to M (HD)	M to M (HD)	P62-500
F	2F-1B	C to M	M to M	P62-479
G	"	C to M (HD)	M to M (HD)	P62-480
H	1F-2B	C to M	M to M	P62-482
J	"	M to M	M to M	P62-483
K	2B		M to M	P62-495
M	1F-1B	M to M (EHD)	M to M (EHD)	P62-494
N	3B		M to M	P62-481
P	2F	M to M		P62-489
Q	2NR	C to M	M to C	P62-485

Legend - C to M = Metal-impregnated-carbon-to-metal
M to M = Metal-to-metal
HD = Heavy-duty
EHD = Extra heavy-duty, with magnetic blowouts

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	PUSHER, for contact groups Refs. A, B, C, D, E, F, G, H, J, and P	P62-462
1A	CLIP, for above, two required	P62-577
2	PUSHER, for contact group Ref. K	P62-463
2A	CLIP, for above, two required	P62-577
3	PUSHER, for contact group Refs. M and N	P62-458
3A	CLIP, for above, two required	P62-577
4	PUSHER, for contact group Ref. Q	P62-459
4A	CLIP, for above, two required	P62-577



Plugboard details

Plugboard Details

Note:
Plugboards are not furnished assembled except in factory wired relay racks or housings.
For application of Type B relays in Welded Steel Cases and Housings, see Catalog Section 5.
For individual relay mountings, see Assemblies Catalog Section 62.

Order by catalog number and name shown in bold type

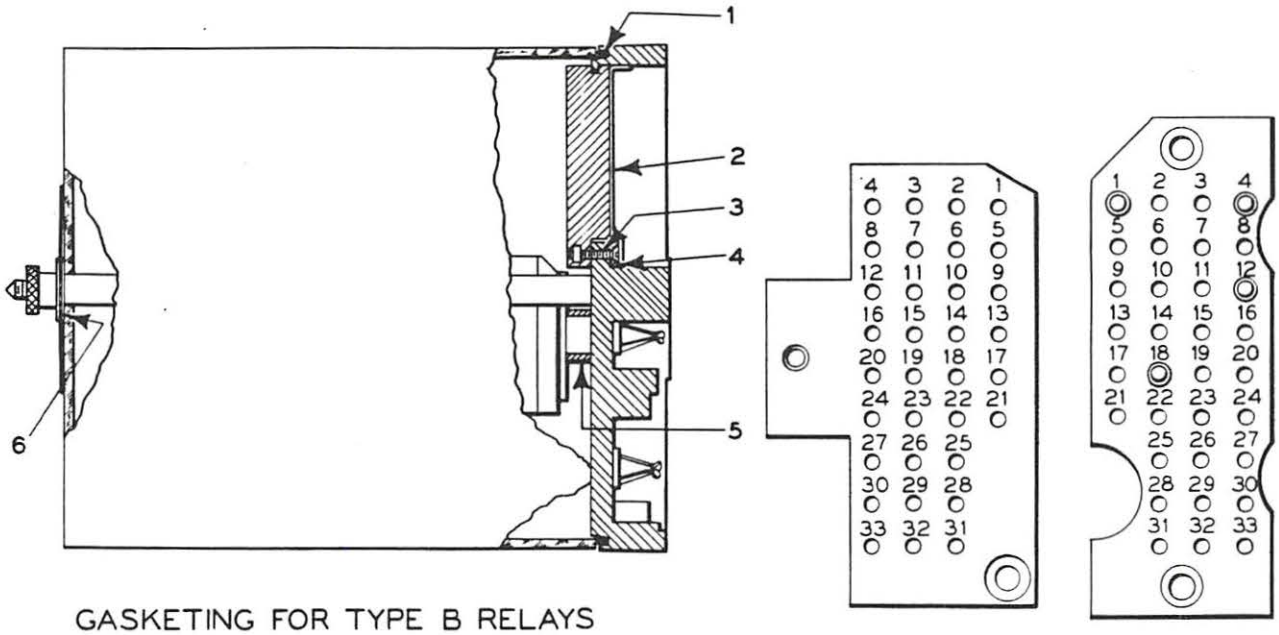
REF.	NAME	CATALOG NUMBER
A	TERMINAL BOARD COMPLETE, with fourteen terminal posts, nuts and washers, also mounting hardware	P62-680
B	TERMINAL BOARD COMPLETE, includes thirty-five terminal posts with nuts and washers, also mounting hardware	P62-679
C	PLUGBOARD KIT, for all Type B, Size 1 relays, except approach, includes clips Ref. 1; insulators Ref. 2; terminals Ref. 3; relay mounting studs with nuts and washers, Refs. 4, 5, 6, 8, 9; plugboard Ref. 7; test post Ref. F; mounting bolts, nuts and washers Refs. 20, 21, 22 and 23. Does not include registration plates, see page 60. If voltage post Ref. E is required, same must be ordered separately - see below.	A62-506
C1	As above except has crimp type terminals	A62-586
D	PLUGBOARD KIT, for all Type B, Size 2 relays and code transmitters except B2 Vane and VTB, includes clips Ref. 1; insulators Ref. 2; terminals Ref. 3; relay mounting studs with nuts and washers Refs. 4, 5, 6, 8, 9; plugboard Ref. 19, test post Ref. F, mounting bolts, nuts and washers Refs. 20, 21, 22 and 23. Does not include registration plates, see page 60. If voltage post Ref. E and terminal block Ref. 10 are required, same must be ordered separately - see below.	A62-508
D1	As above, except for Type B, Size 2, Vane relay	A62-509
D2	Same as D, except for VTB relay and includes two current test terminals and two voltage test terminals	A62-510
D3	Same as Ref. D, except has crimp type terminals	A62-587
D4	Same as Ref. D1, except has crimp type terminals.	A62-588
E	VOLTAGE POST COMPLETE, includes screw, nuts, washers and eyelet, for taking coil voltage.	A62-515
F	TEST POST COMPLETE, includes screw, nuts, washers, and connector, for opening coil circuit	A62-525
1	CLIP, for holding insulator in place	P62-305
2	INSULATOR, for holding terminal Ref. 3 in position on plugboard . .	P62-457
3	TERMINAL, two required per insulator	P62-466
3A	TERMINAL, crimp type, for no. 16 to 20 wire	P3-326
3B	Same as 3A except for no. 10 to 14 wire	P3-327
4	NUT, knurled, for holding relay to plugboard	P62-144
5	STUD, for holding relays to plugboards.	P62-346
6	NUT, for locking nut Ref. 4.	P62-166

Plugboard Details

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
7	**PLUGBOARD, only, for all Type B, Size 1 relays except approach. Does not include terminals, insulators, test posts or mounting screws.**	P62-572
7A	As above, except for approach relay	P62-573
8	WASHER, for nut Ref. 9.	P50-157
9	NUT, Elastic Stop, for holding stud Ref. 5	P62-320
10	TERMINAL BLOCK COMPLETE	P62-339
11	SCREW, for mounting terminal block.	P62-596
11A	WASHER, lock, for above	P62-402
12	SCREW, used as terminal post for test and voltage posts	P62-107
13	NUT, for terminal posts.	P62-333
14	WASHER, for terminal posts	P76-108
15	NUT, hex., for terminal posts	P76-131
16	NUT, spanner, for terminals	P62-129
17	CONNECTOR, for test terminals	P62-190
18	BUSHING, insulating, for screws Ref. 12	P62-203
19	**PLUGBOARD, only, for all Type B, Size 2 relays, does not include terminals, insulators, test post or mounting screws.**	P62-571
20	SCREW, for mounting plugboards.	P62-448
21	WASHER, for screw Ref. 20	P85-50
22	WASHER, lock, for nut Ref. 23	P81-121
23	NUT, for screws Refs. 20 and 25.	P62-167
24	PLATE, filler for blank spaces.	P62-331
25	SCREW, for filler plate	P62-449
25A	NUT, for above	P62-167
25B	WASHER, lock, for above	P81-121
26	CONNECTOR, 1" centers	P76-110
27	**BOARD, designation, two required per horizontal row of terminal boards Ref. A. Includes mounting hardware. Specify lettering required**	P62-682
27A	**BOARD, designation, single, without lettering**	P62-766
28	**BOARD, designation, two required per horizontal row of terminal boards Ref. B. Includes mounting hardware. Specify lettering required**	P62-681
28A	**BOARD, designation, single, without lettering.**	P62-767
29	SLEEVE	P62-298

Memoranda

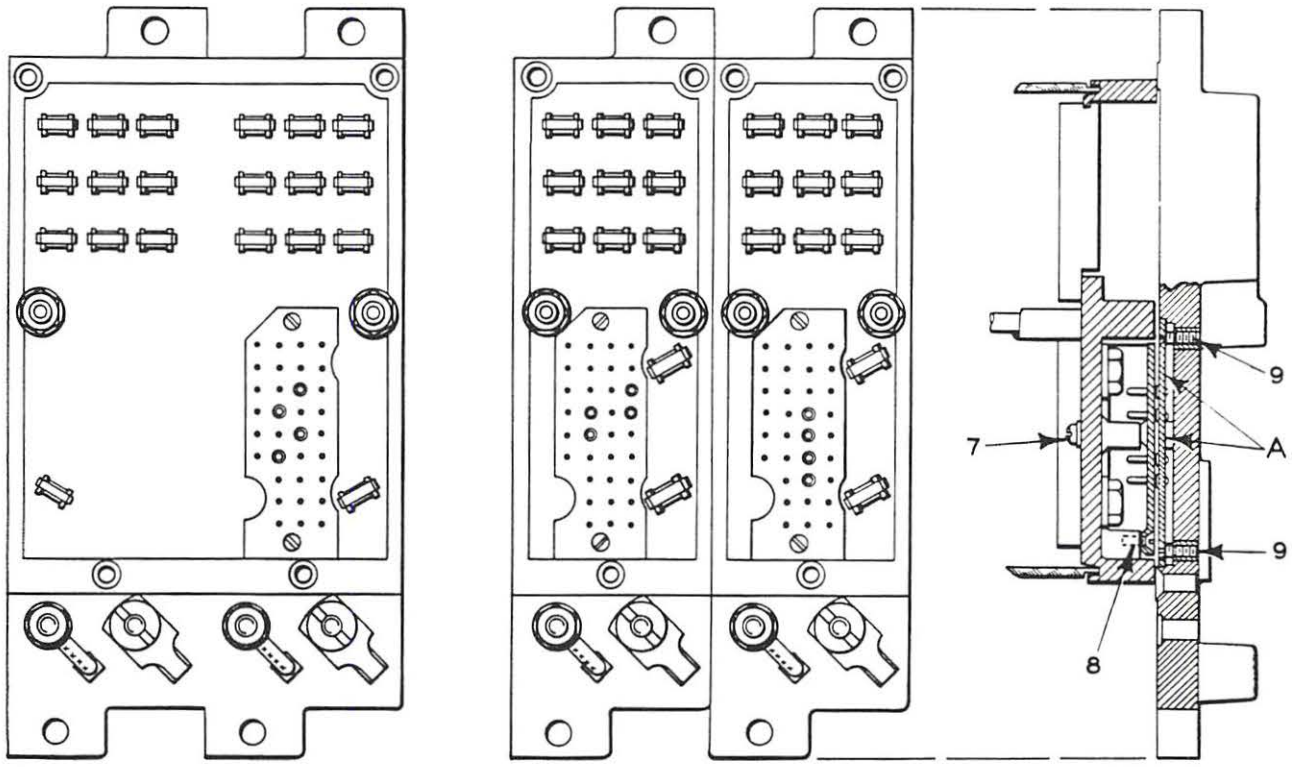


GASKETING FOR TYPE B RELAYS

A

ONE TYPE B2

TWO TYPE B1



REGISTRATION FOR TYPE B RELAYS AND CODE TRANSMITTERS

Gasketing and registration for Type B relays and code transmitters.

Gasketing and Registration for Type B Relays

Note: Registration plates and gaskets as shown on opposite page cannot be applied to relays which were not previously equipped with them.

REF.	NAME	CATALOG NUMBER
* A	REGISTRATION PLATE ASSEMBLY, includes male and female plates and mounting hardware, for all Type B, Size 1 relays except code-responsive and magnetic-stick	P62-720
* A1	As above, except for code-responsive and magnetic-stick relays	P62-670
* A2	REGISTRATION PLATE ASSEMBLY, includes male and female plates and mounting hardware, for all Type B, Size 2 relays except timing and vane	P62-671
* A3	As above, except for Type B, Size 2 timing relays.	P62-668
* A4	Same as above, except for Type B, Size 2 vane relay	P62-669
	* On all above - When ordering, give catalog or drawing number of relay	
1	GASKET, for cover of Type B1 relays	P62-225
1A	As above, except for cover of Type B2 relays	P62-226
2	GASKET, for back of contact blocks, for all relays except Type B2 vane.	P62-227
2A	As above, except for contact spaces 4 to 6 of Type B2 vane	P62-228
2B	Same as Ref. 2, except for contact spaces 1 to 3 of Type B2 vane.	P62-229
3	SCREW, 5/8" long, for plate Ref. 4	P62-200
3A	As above, except 9/16" long, for Types B1 and B2 relays having metal base	P62-105
4	PLATE, for contact blocks, for Types B1 and B2 relays having bakelite base.	P62-300
5	GASKET, for coils of Type B1 and B2 neutral and retained-neutral polarized relays	P62-276
6	GASKET, for front of cover.	P62-277
7	SCREW, 15/16" long, for fastening registration plate to base of Type B1 relay	P62-441
7A	SCREW, 1-3/16" long, for fastening registration plate to base of Type B2 relay	P62-249
7B	NUT, for above	P62-186
7C	COTTER, for above	P62-360
8	SCREW, for fastening registration plate to base of relay	P62-193
9	SCREW, for fastening registration plate to plugboard	P62-192

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TYPES B & VTB RELAYS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P62-100	351-9		SCREW	24
P62-101	351-18		SCREW	23
P62-102	357-8		SCREW	30
P62-104	03306-112		SCREW	50
P62-105	369-4		SCREW	7, 30, 61
P62-106	369-5		SCREW	39
P62-107	376-9		SCREW	58
P62-108	374-10		SCREW	47
P62-109	376-13		SCREW	47
P62-110	401-191		PLATE	6
P62-111	401-194		PLATE	29
P62-112	401-280		PLATE	50
P62-113	401-281		PLATE	19
P62-115	401-309		PLATE	47
P62-116	401-612		PLATE	15, 20
P62-117	401-636		PLATE	34
P62-118	401-718		PLATE	37
P62-119	401-754		PLATE	23
P62-121	492-5		PIN	37
P62-122	493-239		WASHER	53
P62-123	493-260		WASHER	11
P62-125	504-363		PIN	38
P62-126	504-388		PIN	34
P62-127	577-2		NUT	34
P62-128	577-21		NUT	6, 11
P62-129	578-15		NUT	23, 47, 58
P62-130	586-56		SPRING	8, 9, 27
P62-131	586-95		SPRING	8, 9
P62-132	586-104		SPRING	9
P62-133	586-110		SPRING	8, 9, 11, 15, 30
P62-134	586-139		SPRING	41
P62-135	586-149		SPRING	19
P62-136	586-153		SPRING	19
P62-137	586-186		SPRING	53
P62-138	33776-2		WASHER	38
P62-140	5713-80		WASHER	
P62-141	786-151		SPRING	16
P62-142	846-23		NUT	5, 29
P62-143	846-28		NUT	34, 38
P62-144	846-29		NUT	47, 57
P62-145	879-59		STUD	42
P62-146	975-5		WASHER	52
P62-147	975-6		WASHER	52
P62-150	1054-4		SCREW	6
P62-151	1054-11		SCREW	11, 30
P62-152	1148-5		WASHER	33
P62-153	1224-20		YOKE	16, 19
P62-154	1224-25		YOKE	27
P62-155	1225-48		WASHER	39
P62-156	1225-94		WASHER	6, 27
P62-157	1225-103		WASHER	6
P62-158	1225-104		WASHER	6, 39
P62-159	1225-105		WASHER	6, 30
P62-161	1225-154		WASHER	41
P62-162	1225-155		WASHER	41
P62-163	1225-170		WASHER	16, 19
P62-164	1225-199		WASHER	52
P62-165	1472-7		NUT	53
P62-166	1472-8		NUT	33, 47, 57
P62-167	1472-3		NUT	47, 58
P62-169	1533-14		WASHER	38
P62-170	1601-37		L WASHER	50, 51
P62-171	1601-41		L WASHER	38
P62-172	1601-111		L WASHER	38
P62-173	1601-122		L WASHER	20
P62-175	03608-24		SCREW	45, 46
P62-176	03310-116		SCREW	52
P62-177	3018-20		SCREW	33
P62-178	03610-128		SCREW	30
P62-179	3440-21		SCREW	6, 30
P62-180	3440-23		SCREW	20

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TYPES B & VTB RELAYS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P62-181	3440-44		SCREW	17, 20
P62-182	3614-3		NUT	11, 15,16,29
P62-183	3614-7		NUT	6, 16,20,37,39
P62-184	3614-8		NUT	50, 51
P62-185	3890-6		WASHER	42
P62-186	3891-11		NUT	45, 46,61
P62-187	28948-3		NUT	37, 38
P62-188	03406-14		SCREW	38
P62-189	03406-108		SCREW	50
P62-190	4906-126		CONNECTOR	58
P62-191	4906-150		CONNECTOR	47
P62-192	03306-16		SCREW	61
P62-193	03306-12		SCREW	61
P62-194	4951-2		SCREW	15
P62-197	5046-8		WASHER	42
P62-198	5100-33		SCREW	15, 19,27
P62-199	5100-39		SCREW	42
P62-200	03306-120		SCREW	61
P62-201	03306-124		SCREW	15
P62-202	5713-61		RING	41
P62-203	6347-31		BUSHING	47, 58
P62-204	6358-5		NUT	11, 23
P62-205	6358-11		NUT	52
P62-206	6714-263		BUSHING	17, 19
P62-209	7350-261		BUSHING	51
P62-210	7350-275		BUSHING	51
P62-211	7499-2		SCREW	46
P62-212	9327-8		BLOCK	15
P62-214	03410-116		SCREW	42, 51,53
P62-215	03410-120		SCREW	
P62-216	03410-124		SCREW	23, 51
P62-217	03410-128		SCREW	52
P62-218	03410-112		SCREW	
P62-219	03410-140		SCREW	19, 23
P62-221	12578		NUT	52, 53
P62-222	12578-2		NUT	34
P62-223	12578-5		NUT	39
P62-224	13006-48		SCREW	16
P62-225	13014-221		GASKET	61
P62-226	13014-222		GASKET	61
P62-227	13014-223		GASKET	61
P62-228	13014-279		GASKET	61
P62-229	13014-280		GASKET	9, 61
P62-230	13014-312		GASKET	42
P62-231	13061-57GR1		CONTACT	24
P62-232	13061-58GR1		CONTACT	24
P62-233	13108-30		SPRING	46
P62-235	16111-16		SPRING	33
P62-236	16111-63		SPRING	5, 29
P62-237	17185		STOP	51
P62-238	17188		PIN	52
P62-239	17188-13		PIN	39
P62-240	17189-1		WEIGHT	53
P62-241	17189-2		WEIGHT	53
P62-242	17378-15		SHUNT STRIP	6
P62-243	17378-23		SHUNT STRIP	27
P62-244	17566-3		STOP	15
P62-245	18472-1GR1		ARMATURE	47
P62-246	18547-80		CLIP	34
P62-247	18559		GUIDE	52
P62-248	18575		COVER	50
P62-250	18746-25		SCREW	15
P62-252	20154 GR1		RESISTOR	39
P62-253	20172 GR1		SCREW	39
P62-254	20247-4		STUD	53
P62-255	20360-12		SCREW	6, 11
P62-256	22148 GR2		RIBBON	52
P62-257	22539-8		WASHER	52
P62-258	22539-21		WASHER	41
P62-260	22543-20		WASHER	5
P62-261	22543-21		WASHER	29
P62-262	22543-36		WASHER	15
P62-263	23308-4		SCREW	51
P62-264	23308-5		SCREW	50
P62-265	23308-8		SCREW	50

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TYPES B & VTB RELAYS - PARTS LIST

CAT.NO.	DRAWING NO. QTY	NAME	PG.
P62-267	03408-48	SCREW	
P62-268	28989-46	SCREW	47
P62-269	29474-29	TUBE	38
P62-270	29474-47	TUBE	46
P62-271	29514-114	CORE	42
P62-272	29523-51	ARMATURE	19
P62-273	29523-72	ARMATURE	16
P62-274	30220-38	PLATE	19
P62-275	30220-148	PLATE	53
P62-276	30646-5	GASKET	61
P62-277	30646-12	GASKET	61
P62-278	31066-101GR5	COIL	19
P62-279	31066-101GR8	COIL	20
P62-280	31066-101 GR11	COIL	19
P62-281	31066-101 GR12	COIL	16
P62-282	31066-101 GR13	COIL	16
P62-283	31066-101 GR16	COIL	16
P62-284	31066-199GR1	COIL	
P62-285	31066-116GR2	COIL	19
P62-286	31066-135GR1	COIL	51
P62-287	31066-135GR2	COIL	51
P62-288	31066-135GR3	COIL	51
P62-289	31066-136GR1	COIL	39
P62-290	31066-136GR2	COIL	39
P62-291	590-21	WASHER	38
P62-293	34017-31	WASHER	6, 38
P62-294	34829-1	DISC	42
P62-295	34956-4	SPRING	52
P62-296	34956-5	SPRING	53
P62-297	03308-16	SCREW	51
P62-298	35189-33	SLEEVE	47, 58
P62-299	35285	SEAL	6, 29, 46
P62-300	35845-110	PLATE	61
P62-301	36126-4	BALL	33
P62-302	36126-5	BALL	16, 20
P62-303	36177-4	WASHER	41
P62-304	37367-5	LINK	38
P62-306	38165-64	SPACER	20
P62-308	38316-2	STOP	53
P62-309	39043-13GR1	ARMATURE	33
P62-310	39043-13GR3	ARMATURE	29
P62-311	39043-17GR1	ARMATURE	11
P62-312	39043-22GR1	ARMATURE	5
P62-313	39043-32GR2	ARMATURE	15
P62-314	39264-7	PIN	38
P62-315	39549-8	NUT	16, 20
P62-316	39549-13	NUT	52
P62-317	39823-3	WASHER	33
P62-318	40797	PIN	34
P62-319	41909-22	HANDLE	46
P62-320	42333-65	NUT	47, 58
P62-321	42333-55	NUT	6, 30
P62-323	42760-97GR3	CONNECTOR	23
P62-326	42760-97GR6	CONNECTOR	24
P62-327	42760-112GR1	CONNECTOR	19
P62-328	42788-2GR1	POST	45
P62-329	42788-2GR2	POST	45
P62-330	42792-12	INSULATOR	38
P62-331	42812	PLATE	58
P62-332	42835-11	NUT	30
P62-333	42839-5	NUT	47, 58
P62-334	01273-3	WASHER	19
P62-335	43131-49	TUBE	19
P62-336	43712-8	RING	52
P62-337	43712-9	RING	52
P62-338	43712-11	RING	52
P62-339		TERMINAL BLOCK COMP.	
	46048-53GR1	TERMINAL BLOCK	
	07608-224	SCREW	
	53029-68	WASHER	
P62-340	46453-2	SCREW	19
P62-343	47508-128	TERM BLOCK	20
P62-344	47544-49	SHAFT	41
P62-345	01250-2	WASHER	41
P62-346	48813-6	STUD	57
P62-347	48813-7	STUD	47
P62-348	49092-56	BRACKET	33
P62-349	49092-89	BRACKET	50
P62-350	49092-107	BRACKET	34

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TYPES B & VTB RELAYS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P62-351	49655-180		SPACER	38
P62-352	49655-214		SPACER	34
P62-353	49655-215		SPACER	34
P62-354	49843-10		KNOB	37
P62-355	49863-1		SCREW	23
P62-359	51055-8		SPRING	52
P62-360	51026-5		COTTER	6
P62-361	51321-23		CONTACT	20
P62-362	51336-9GR1		FINGER	24
P62-363	51336-22GR1		FINGER	24
P62-364	51336-22GR2		FINGER	24
P62-366	51336-24GR2		FINGER	24
P62-370	51336-31GR1		FINGER	24
P62-371	51336-31GR2		FINGER	24
P62-372	51432-58		STRAP	23
P62-373	51432-49		STRAP	33
P62-374	51507-13GR2		VANE	33
P62-375	51508-10GR3		MAGNET	33
P62-376	51508-11GR5		MAGNET	33
P62-377	51508-10GR10		MAGNET	33
P62-378	51522-37GR1		COIL	34
P62-379	51522-37GR4		COIL	
P62-380	51522-38GR2		COIL	34
P62-381	51527-1GR2		BEARING	33
P62-382	51553-36		FORM	34
P62-383	51553-88		FORM	6, 29
P62-384	51553-38		FORM	33
P62-385	51553-43		FORM	15, 39
P62-386	51553-44		FORM	38
P62-387	51553-48		FORM	19
P62-388	51553-49		FORM	16
P62-389	51553-51		FORM	51
P62-390	51553-58		FORM	11
P62-391	51553-73		FORM	46
P62-392	51553-78		FORM	23
P62-393	52281-320		CAPACITOR	15, 39
P62-395	52822-12		NUT	7
P62-396	53007-8		MAGNET	16, 19
P62-397	53007-21		MAGNET	15
P62-398	53007-26		MAGNET	11
P62-399	53007-29		MAGNET	30
P62-401	53029-69		WASHER	19, 23,30,42,46,47,51,52,53
P62-402	53029-68		WASHER	5, 6,19,29,30,33,34,37,38,39,45,46,47,58
P62-404	53029-60		WASHER	39
P62-406	53029-67		WASHER	15, 17,38
P62-408	53029-64		WASHER	34
P62-409	53029-62		WASHER	16
P62-410	53084-1		NUT	15, 27
P62-411	53084-3		NUT	16, 20
P62-412	53829-8		SCREW	16
P62-413	53879-17		SHIM	27
P62-414	53879-18		SHIM	27
P62-415	53879-19		SHIM	27
P62-416	54297-3		BRACKET	51
P62-417	54302-4GR1		SUPPORT	19
P62-418	54385-31GR1		SUPPORT	30
P62-419	54392-1		SCREW	16, 20,23,50
P62-421	54614-34GR1		FINGER	20
P62-422	54818-14		ARM	16, 20,53
P62-423	54847-11		CLAMP	52
P62-424	54862-5		MAGNET	33
P62-425	54960-3		SLUG	6
P62-426	54960-4		SLUG	6
P62-427	54960-5		SLUG	6
P62-428	54960-6		SLUG	7
P62-429	54960-31		SLUG	38
P62-430	54960-52		SLUG	39
P62-431	55083-12		TERMINAL	16, 45,50
P62-432	55085-208		TAG	7
P62-433	55086-1		NUT	16
P62-435	03408-10		SCREW	5, 19,29,39
P62-436	03408-14		SCREW	33
P62-440	55160-33		SCREW	19
P62-441	55160-35		SCREW	61
P62-442	03602-6		SCREW	6, 29
P62-443	03402-8		SCREW	34
P62-444	03604-6		SCREW	39
P62-445	03404-8		SCREW	6, 30,46
P62-446	55470-10		SCREW	

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TYPES B & VTB RELAYS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P62-447	55470-19		SCREW	34
P62-448	55470-4		SCREW	47, 58
P62-449	55470-8		SCREW	58
P62-450	55557		SLEEVE	16, 45, 50
P62-451	55557-4		SLEEVE	17
P62-452	55557-13		SLEEVE	
P62-453	03406-128		SCREW	
P62-454	03406-124		SCREW	16, 17, 20
P62-455	55561-3		SCREW	51
P62-456	55718-1		SCREW	20
P62-457	55862-24		INSULATOR	47, 57
P62-458	55863-9		PUSHER	55
P62-459	55863-17		PUSHER	55
P62-460	55863-29		PUSHER	11
P62-461	55863-35		PUSHER	33
P62-462	55863-37		PUSHER	55
P62-463	55863-50		PUSHER	15, 55
P62-464	55863-52		PUSHER	45
P62-465	55863-53		PUSHER	45
P62-466	55871-19		TERMINAL	47, 57
P62-467	55911-13		PLATE	20
P62-468	55911-35		PLATE	52
P62-469	55911-36		PLATE	51
P62-470	55912-1		PLATE	6
P62-471	55912-2		PLATE	30
P62-472	55912-6		PLATE	16, 19
P62-473	55914-1		PLATE	5
P62-474	55914-2		PLATE	29
P62-476	55968-1		SCREW	6, 11, 29
P62-477	56012-1GR1		CONTACT GR	24, 27, 39
P62-478	56012-1GR2		CONTACT GR	15, 29, 39
P62-479	56012-108GR2		CONTACT GR	55
P62-480	56012-108GR3		CONTACT GR	55
P62-481	56012-4GR2		CONTACT GR	55
P62-482	56012-108GR5		CONTACT GR	55
P62-483	56012-5GR5		CONTACT GR	55
P62-484	56012-108GR6		CONTACT GR	55
P62-485	56012-108GR7		CONTACT GR	55
P62-486	56012-9GR2		CONTACT GR	55
P62-487	56012-108GR8		CONTACT GR	55
P62-488	56012-108GR9		CONTACT GR	55
P62-489	56012-16GR2		CONTACT GR	55
P62-490	56012-17GR1		CONTACT GR	23, 39
P62-491	56012-28GR1		CONTACT GR	19, 50
P62-492	56012-32GR1		CONTACT GR	11
P62-493	56012-108 GR11		CONTACT GR	33
P62-494	56012-108 GR13		CONTACT GROUP	55
P62-495	56012-53GR1		CONTACT GR	55
P62-496	56012-60GR1		CONTACT GR	45
P62-497			CONTACT GROUP	45
	56012-109GR2		CONTACT GR	
	55863-52		PUSHER	
	55863-53		PUSHER	
	56025-1	2	CLIP	
P62-498			CONTACT GROUP	45
	56012-109GR3		CONTACT GR	
	55863-52		PUSHER	
	55863-53		PUSHER	
	56025-1	2	CLIP	
P62-499			CONTACT GROUP	45
	56012-109GR4		CONTACT GR	
	55863-52		PUSHER	
	55863-53		PUSHER	
	56025-1	2	CLIP	
P62-500	56012-108 GR14		CONTACT GR	27, 55
P62-501	56012-108 GR15		CONTACT GR	15
P62-502	56012-108 GR16		CONTACT GR	37
P62-503	56012-108 GR17		CONTACT GROUP	37
P62-505	56013-14GR1		BASE	33
P62-506	56013-16GR2		BASE	5

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TYPES B & VTB RELAYS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P62-508	56013-16GR4		BASE	15, 19
P62-509	56013-19GR1		BASE	37
P62-510	56013-19GR2		BASE	29
P62-511	56013-19GR3		BASE	33
P62-512	56013-19GR5		BASE	37
P62-513	56013-26GR1		BASE	50
P62-514	56013-26GR2		BASE	50
P62-515	56015-8GR10		COIL	9
P62-516	56015-8GR12		COIL	9
P62-517	56015-8GR13		COIL	8
P62-518	56015-8GR14		COIL	8, 9
P62-519	56015-8GR15		COIL	8, 9
P62-520	56015-9GR8		COIL	8
P62-521	56015-9GR10		COIL	8
P62-522	56015-9GR15		COIL	9
P62-523	56015-9GR17		COIL	9
P62-524	56015-9GR19		COIL	9
P62-525	56015-9GR21		COIL	9
P62-527	56015-10GR11		COIL	33
P62-528	56015-10GR18		COIL	30, 33
P62-529	56015-11GR14		COIL	9
P62-530	56015-11GR15		COIL	9, 27
P62-531	56015-12GR14		COIL	27
P62-532	56015-12GR15		COIL	9
P62-533	56015-12GR16		COIL	9
P62-534	56015-12GR17		COIL	9
P62-535	56015-14GR3		COIL	9
P62-536	56015-15GR4		COIL	9
P62-537	56015-21GR3		COIL	9
P62-538	56015-21GR4		COIL	9
P62-539	56015-22GR2		COIL	8
P62-540	56015-22GR3		COIL	8
P62-541	56015-22GR5		COIL	8
P62-542	56015-22GR6		COIL	8
P62-543	56015-22GR7		COIL	8
P62-545	56015-22GR12		COIL	8
P62-546	56015-22GR14		COIL	8
P62-547	56015-23GR1		COIL	8
P62-548	56015-23GR5		COIL	9
P62-549	56015-27GR9		COIL	19
P62-550	56015-27GR10		COIL	19
P62-551	56015-35GR3		COIL	8
P62-552	56015-37GR2		COIL	8
P62-553	56015-37GR3		COIL	8
P62-554	56015-41GR6		COIL	9, 11
P62-555	56015-42GR1		COIL	12
P62-556	56015-43GR1		COIL	12
P62-557	56015-43GR2		COIL	12
P62-558	56015-45GR1		COIL	11
P62-559	56015-45GR2		COIL	11
P62-560	56015-45GR5		COIL	11
P62-563	56015-56GR1		COIL	8
P62-565	56015-58GR1		COIL	9
P62-566	56015-60GR3		COIL	15
P62-567	56015-61GR13		COIL	30
P62-568	56015-63GR1		COIL	9
P62-569	56016-1GR1		ARMATURE	33
P62-570	56016-3GR1		ARMATURE	37
P62-571	56022-21		PLUGBOARD	58
P62-572	56022-26		PLUGBOARD	58
P62-573	56022-36		PLUGBOARD	58
P62-574	56023-34		BASE	45
P62-575	56024		NUT	5, 29
P62-576	56025		CLIP	33
P62-577	56025-1		CLIP	11, 15, 39, 45, 55
P62-578	56026-1		NUT	6
P62-579	56029		COVER	5
P62-580	56029-8		COVER	23
P62-581	56029-31		COVER	45
P62-583	56035		POLE	33
P62-584	56108-160GR1		MOTOR	37
P62-585	56108-160GR2		MOTOR	37
P62-586	56108-160GR3		MOTOR	37
P62-587	56108-160GR4		MOTOR	37
P62-589	56108-160GR5		MOTOR	37
P62-590	56108-160GR6		MOTOR	37
P62-591	56176-26		SEAT	53
P62-592	56176-29		SEAT	53
P62-593	56190-3		SCREW	6, 29
P62-594	56190-4		SCREW	37, 46
P62-595	56190-7		SCREW	37
P62-596	07608-224		SCREW	58
P62-597	56563-3		STOP	34
P62-598	56644-1GR3		CONDENSER	50

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TYPES B & VTB RELAYS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P62-599	57016-5GR1		CONTACT GR	50
P62-600	57016-13GR2		CONTACT GROUP	
P62-601	57016-13GR3		CONTACT GR	50
P62-602	57016-11GR1		CONTACT GR	50
P62-603	57094-10GR1		ROTOR	52
P62-604	57037-9GR1		SHAFT	53
P62-605	57091-1		POLE	51
P62-606	57091-2		POLE	51
P62-607	57091-6		POLE	51
P62-608	57092-8GR1		BEARING	52
P62-609	57092-9GR1		BEARING	51
P62-610	57092-11GR1		BEARING	53
P62-611	57092-12GR1		BEARING	53
P62-612	57094-9GR1		ROTOR	50
P62-613	57094-9GR2		ROTOR	50
P62-614	57094-9GR3		ROTOR	50
P62-615	57094-13GR1		ROTOR	50
P62-616	57094-13GR2		ROTOR	50
P62-617	57101 GR1		COVER	23
P62-618	57101-1GR1		COVER	11
P62-619	57104		SCREW	24
P62-620	57104-1		SCREW	23
P62-621	57105		BRACKET	23
P62-622	57106		BLOCK	23
P62-624	57109-3		HUB	53
P62-625	57110		ARMATURE	52
P62-626	57110-3		ARMATURE	53
P62-627	57265-3GR1		CONTACT GR	41
P62-630	57265-10GR1		CONTACT GR	41
P62-631	57265-11GR1		CONTACT GR	41
P62-632	57265-12GR1		CONTACT GR	41
P62-633	57265-13GR1		CONTACT GR	41
P62-634	57265-14GR1		CONTACT GR	41
P62-635	57273 GR4		PLATE	41
P62-636	57277-1GR2		BLOCK	50
P62-637	57279		FLYWHEEL	41
P62-638	57280 GR1		ARMATURE	41
P62-639	57281		WASHER	42
P62-640	56029-41		COVER	29, 50
P62-641	57287-2GR8		COVER	33
P62-642	57287-7GR1		COVER	11
P62-643	57287-2GR11		COVER	50
P62-644	57289-1GR2		TIMER RELAY	41
P62-645	57289-1GR1		TIMER	41
P62-647	57290 GR2		ADJUSTER	41
P62-648	57292		SCREW	38
P62-649	57293 GR1		GEAR	41
P62-650	57287-2GR4		COVER	39
P62-651	57491-1		FRAME	50
P62-652	57506-1GR1		CONT BLOCK	20
P62-653	57508-3GR1		CONTACT GR	16
P62-654	57508-18GR1		CONTACT GR	19
P62-655	57508-18GR2		CONTACT GR	19
P62-656	57508-19GR1		CONTACT GR	15
P62-657	57508-19GR2		CONTACT GR	15
P62-658	57984-4GR1		RESISTOR	12
P62-659	57984-4GR2		RESISTOR	12
P62-660	57984-4GR3		RESISTOR	12
P62-661	58485 GR1		NUT	11
P62-662	58641-9GR1		CONTACT GR	20
P62-663	58641-10GR1		CONTACT GR	15
P62-664	58643		PUSHER	16
P62-665	58728 GR1		CAM	51
P62-666	58728 GR2		CAM	51
P62-667	58879-9GR51		PLATE	45
P62-668	58879 GR53		PLATE	61
P62-670	58879-5GR5		PLATE	61
P62-671	58879-5GR4		REG. PLATE	61
P62-674	58898-7		STRIP	30
P62-675	58898-8		STRIP	11
P62-677	58967-4		CLAMP	11
P62-679			BOARD 59681-2 GR1	57
	59681-1GR2		BOARD	
	1225-2	105	WASHER	
	42843-1	70	NUT	
	55470-15	4	SCREW	
	22890-3	4	WASHER	
	01273-6	4	WASHER	
P62-680			BOARD 59681-5 GR1	57
	59681-4GR2		BOARD	
	1225-2	42	WASHER	
	42843-1	28	NUT	
	55470-15	2	SCREW	
	22890-3	2	WASHER	
	01273-6	2	WASHER	

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TYPES B & VTB RELAYS - PARTS LIST

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P62-681			BOARD	58
	59683-12		BOARD	
	59683-13		BOARD	
	55470-15	4	SCREW	
	22890-3	4	WASHER	
	35770-9	4	SPACER	
	01273-6	4	WASHER	
P62-682			BOARD	58
	59683-14		BOARD	
	59683-15		BOARD	
	55470-30	4	SCREW	
	22890-3	4	WASHER	
	01273-6	4	WASHER	
P62-683	59721-191		RESISTOR	15
P62-684	59723-7		RESISTOR	16
P62-685	59723-124		RESISTOR	16, 51
P62-686	59857-4GR4		COIL	46
P62-687	59857-4GR5		COIL	46
P62-688	59857-5GR6		COIL	46
P62-689	59857-5GR7		COIL	46
P62-690	51553-81		FORM	6
P62-691	56015-45GR10		COIL	9
P62-692	577-20		NUT	16
P62-693	846-39		NUT	19
P62-694	31066-101 GR10		COIL	19
P62-695	03602-4		SCREW	29
P62-696	01250-6		WASHER	30
P62-697	51432-48		STRAP	33
P62-698	1148-6		WASHER	34
P62-699	56012-38GR1		CONTACT GR	34
P62-700	56012-46GR1		CONTACT GR	34
P62-701	1054-6		SCREW	37
P62-702	03308-10		SCREW	38
P62-703	57286		BRACE	38
P62-704	55863-64		PUSHER	39
P62-705	3018-37		SCREW	39
P62-707	57293 GR2		GEAR	41
P62-708	7350-190		BUSHING	42
P62-709	28989-11		SCREW	42
P62-710	493-183		WASHER	42
P62-711	8885-134		STUD	42
P62-713	57091-7		POLE	51
P62-714	59723		RESISTOR	51
P62-715	975-7		WASHER	52
P62-716	57019		PUSHER	51
P62-717	57019-3		PUSHER	51
P62-718	493-286		WASHER	53
P62-719	54818-15		ARM	53
P62-720	58879 GR51		PLATE	
P62-730	81408-22GR1		TUBING	15, 46
P62-731	81408-23GR1		TUBING	15, 19
P62-732	81409-1GR1		TUBING	23, 24
P62-733	56015-22GR1		COIL	8
P62-734	56015-27GR12		COIL	20
P62-740	1224-34		YOKE	46
P62-741	6471-2		NUT	46
P62-742	12563-20		SCREW	
P62-743	13006-63		SCREW	46
P62-744	18470 GR1		BRACKET	46
P62-745	18470 GR2		BRACKET	47
P62-746	18470-1GR1		BRACKET	45
P62-747	18475		PLATE	46
P62-748	18476		FRAME	46
P62-749	29514-172		CORE	46
P62-750	29514-173		CORE	46
P62-751	31784-1		NUT	47
P62-753	03606-108		SCREW	47
P62-754	45896-29		BUSHING	45
P62-755	50514-12		SPACER	45
P62-756	53007-23		MAGNET	46
P62-758	53336-12		BLOCK	46
P62-759	03604-8		SCREW	45
P62-760			CONTACT GROUP	45
	56012-109GR5		CONTACT GR	
	55863-52		PUSHER	
	55863-53		PUSHER	
	56025-1	2	CLIP	
P62-762	59723-112		RESISTOR	47
P62-763	59857-4GR6		COIL	46
P62-764	59857-4GR9		COIL	46
P62-765	01272-2		NUT	46
P62-766	59683-10GR1		BOARD	58
P62-767	59683-6GR1		BOARD	58
P62-768	641-48		CLAMP	27
P62-769			CODER X-PAK	27
	30733-1GR4		CODER	
	17550-71GR1		MOD KIT	

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TYPES B & VTB RELAYS - PARTS LIST

CAT.NO.	DRAWING NO. QTY	NAME	PG.
P62-770	56015-22GR10	COIL	27
P62-771	5046-24	WASHER	42
P62-773	56012-1GR3	CONTACT GR	39
P62-774	56015-8GR21	COIL	9
P62-775	56015-8GR22	COIL	9
P62-776	56015-22GR11	COIL B-RELAY	9
P62-777	56015-29GR1	COIL	9
P62-778	56015-30GR1	COIL	9
P62-779	56015-56GR3	COIL B-RELAY	9
P62-780	56015-65GR2	COIL B-RELAY	9
P62-781	56015-67GR1	COIL B-RELAY	9
P62-782	586-138	SPRING	9, 19
P62-783	586-169	SPRING	9
P62-784		CODER X-PAK 56-64 FL	27
	30733-1GR5	CODER	
	17550-71GR1	MOD KIT	
P62-785	31066-101 GR18	COIL B-RELAY	19
P62-786	56015-10GR12	COIL B-RELAY	30
P62-787	56015-10GR14	COIL B-RELAY	30

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PARTS LIST

Types K, KB & Thermal Relays

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GENERAL INFORMATION

Parts for Type K, Size 2 neutral relays are listed beginning on page 4. This list includes many parts common to all Type K, Size 2 relays, such as approach-lighting, biased-neutral relays etc. Parts not common to all Type K, Size 2 relays, are listed separately under their specific relay headings.

Ordering information for Types K, Sizes 4, 6, 8, neutral relays, polarized relays etc. are shown in a similar mannerl.

For assemblies, see Catalog Section 65.

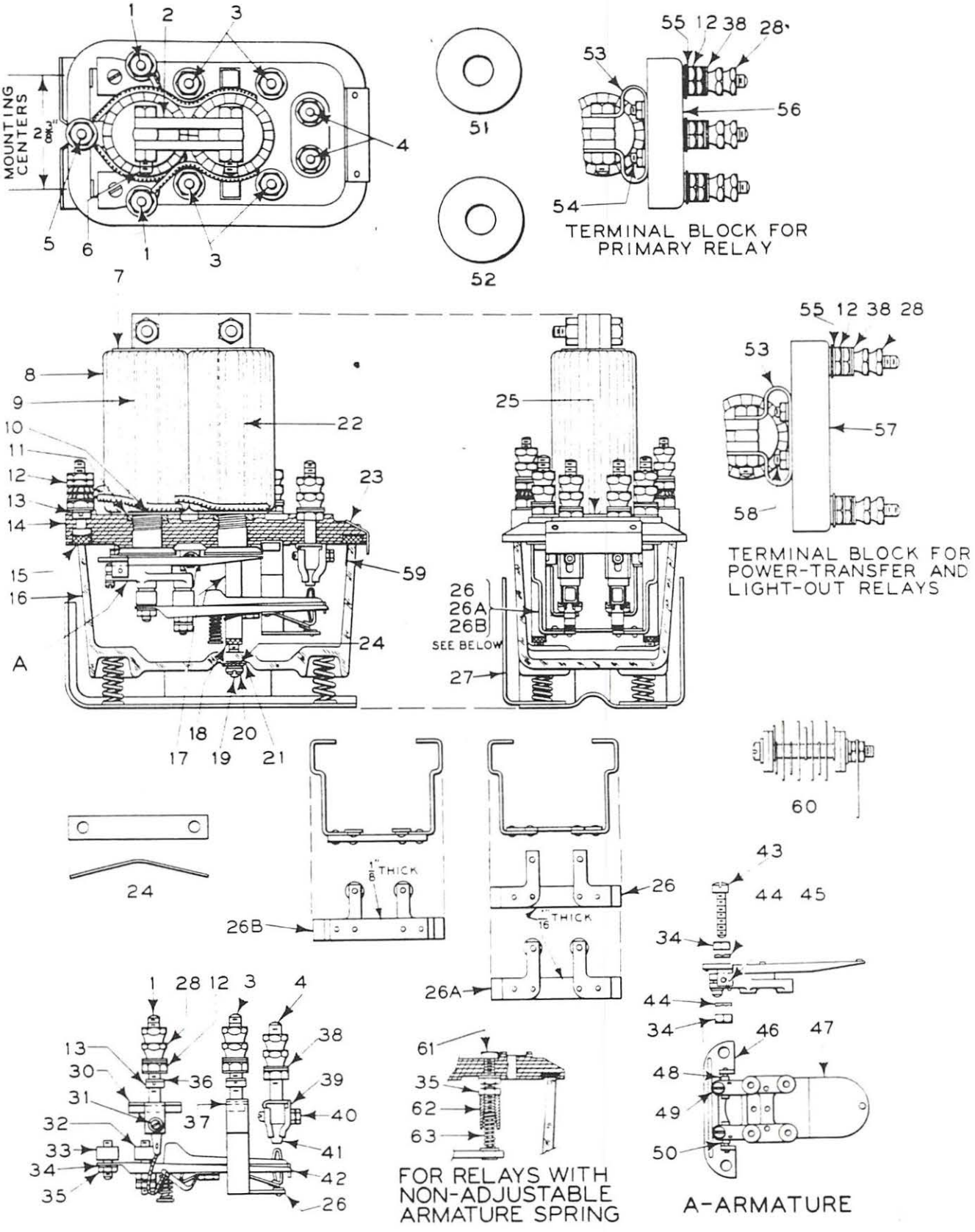
Periodic Tests

GRS recommends that Type K relays be inspected and tested at least every two years. The tests and inspections should include: pickup current, dropaway current, timing of slow operating and timing relays, and visual inspection of: contacts for damage or misalignment, corrosion or other contamination of parts, loose parts in cover, broken seal, and cracked or broken cover.

GENERAL RAILWAY SIGNAL
A UNIT OF GENERAL SIGNAL
ROCHESTER NEW YORK 14602

A-1610

AUGUST 1978



Type K, Size 2 relays.

Type K, Size 2 Relays

Common Parts List

This list covers repair parts for all Type K, Size 2 neutral relays except special parts for the following:

Biased-neutral	see page 14	Signal-flasher	see page 14
Two-rate charge-control	see page 10	Switch-overload	see page 10
Code-responsive	see page 18		

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
*A	ARMATURE COMPLETE, for all Size 2 relays except switch-overload, two-rate charge-control, signal-flasher, and code-responsive	P65-533
1	SCREW, for coil connection	P65-103
2	YOKE, for cores, for all Size 2 relays except two-rate charge-control and track approach-lighting	P50-471
2A	As above, except for track approach-lighting	P65-576
3	SCREW, for contact fingers	P65-102
4	SCREW, for front contacts	P65-504
5	SCREW, for coil connection	P65-100
6	SCREW, for fastening yokes to cores, for all Size 2 relays except for track approach-lighting	P65-272
6A	As above, except for track approach-lighting	P65-273
6B	NUT, for Ref. 6	P65-142
6C	NUT, slotted, for Ref. 6A	P65-143
7	WASHER, for top of coils	P62-293
8	COIL, for relay, see pages 7 to 9 for ordering information	
9	CORE, 17/32" dia., for back coil	P65-334
9A	As above, except 5/8" dia.	P65-342
10	WASHER, felt, for use under coils	P65-189
11	NUT, lock, for Ref. 9	P65-287
11A	As above, except for Ref. 9A	P65-289
12	NUT, for terminal posts	P65-585
13	NUT, spanner, for terminal posts	P65-588
14	COVER, for Size 2 relays with 17/32" dia. cores	P65-330

* Give catalog or drawing number of relay

Type K, Size 2 Relays
Common Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
14A	As above, except for relays with 5/8" dia. cores	P65-331
15	GASKET, for glass case	P65-250
16	GLASS CASE	P65-493
17	BUSHING, insulating for screw Ref. 19	P65-467
18	NUT, knurled, for screw Ref. 19	P65-464
19	SCREW, for fastening case to cover	P65-308
20	NUT, for screw Ref. 19	P65-164
21	WASHER, for use between spring and case	P65-182
22	CORE COMPLETE, for front coil, for Size 2 relays with 17/32" dia. cores, except approach track	P65-351
22A	As above, except for approach track	P65-352
22B	Same as Ref. 22, except for relays with 5/8" dia. cores	P65-353
23	NAME PLATE, for all Size 2 relays except two-rate charge-control and signal-flasher	P65-125
23A	SCREW, for above	P62-419
24	SPRING, for holding case to cover	P65-274
25	SHUNT STRIP, for slow-pickup relays	P65-279
26	SUPPORT, back contact, consists of two supports with narrow contacts riveted to insulation plate, for all Size 2 relays except as listed below:	P65-641
26A	As above, except with wide contact for power-transfer	P65-642
26B	Same as Ref. 26, except for specific application relay cat. No. A65-345	P65-640
27	BRACKET, shock absorber for relay	P65-563
28	NUT, for terminal posts	P76-131
30	TERMINAL, for all Size 2 relays except two-rate charge-control and signal flasher	P65-677
31	SCREW, for terminal	P65-212
31A	NUT, for above	P65-211
31B	WASHER, lock, for above	P62-406
32	INSULATOR, with long screw, for fastening finger to armature	P62-330
33	INSULATOR, with short screw, for fastening finger to armature	P65-557

Type K, Size 2 Relays
Common Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
34	WASHER, lock, for screws on insulators	P65-973
35	NUT, for screws Ref. 43 and screws on insulators	P65-150
36	WASHER, lead, for terminal posts	P65-190
37	WASHER, lock, for terminal posts Ref. 3	P65-179
38	WASHER, for terminal posts	P76-108
39	HOLDER, back, for front contact	P65-720
39A	HOLDER, front, for front contact	P65-836
40	SCREW, for holder	P65-763
40A	NUT, for above	P65-498
41	CONTACT, front, metal-impregnated carbon	P65-256
41A	As above, except metal contact	P65-647
42	FINGER COMPLETE, for references see page 64	
43	SCREW, for fastening armature to cover	P65-117
44	WASHER, lock for screw Ref. 43	P65-197
45	PIN, for locking trunnions in place	P65-170
46	BRACKET, for armature	P65-714
*47	ARMATURE, for relay	P65-374
48	TRUNNION, for armature	P65-458
49	SCREW, for clamping armature to trunnions	P65-112
49A	WASHER, for above	P62-402
50	TRUNNION, for armature	P65-459
51	WASHER, copper, for slow-release relays	P65-177
52	WASHER, fibre, for slow-release relays	P65-146
53	SUPPORT, for terminal blocks Refs. 56 and 57	P65-719
54	SCREW, for fastening terminal block Ref. 56 to support	P65-109
54A	NUT, for above	P65-150
54B	WASHER, lock, for above	P65-973
55	WASHER, lock, for terminal posts	P81-206
56	TERMINAL BLOCK, with three posts, for primary relay of primary - secondary combination	P65-601

* Give catalog or drawing number of relay

Type K, Size 2 Relays

Common Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
57	TERMINAL BLOCK, with two posts, for power-transfer and light-out relays	P65-221
58	SCREW, for fastening terminal block Ref. 57 to support	P65-839
58A	NUT, for above	P65-150
58B	WASHER, lock, for above	P65-973
59	TEST DATA FORM, for all Size 2 relays except, overload, two-rate charge-control, code-responsive, and flasher	P65-659
60	RECTIFIER, Type S 1/4, for 10 and 12 volt, Size 2 power-transfer relays	A53-541
60A	As above, except, for Size 2 light-out relays	A53-135
61	SCREW, for seat	P62-101
61A	NUT, for screw Ref. 61	P65-150
62	SEAT, for spring	P65-965
63	SPRING, for armature	P65-156

Coils

To order specify "Coil" and give catalog number

NOMINAL RES. OHMS	POSITION OF COIL ON RELAY	USED WITH CATALOG NO.	ORDERING REFERENCE CATALOG NUMBER
.21	Front or Back	A65-100	P65-417
8.5	Front or Back	A65-110	P65-431
30	Front or Back	A65-112	P65-962
.051	Front or Back	A65-260	P65-416
.069	Front	A65-261	P65-421
.108	Front or Back	A65-262	P65-420
.069	Front	A65-263	P65-421
500	Back	A65-263	P65-418
400	Front	A65-264	P65-414
.069	Back	A65-264	P65-421
.045	Left	A65-270	P65-425
.086	Left	A65-271	P65-426
500	Left	A65-272	P65-404
.086	Right	A65-272	P65-426
1.0	Front or Back	A65-300	P65-409
2.0	Front or Back	A65-301	P65-410
250	Front or Back	A65-305	P65-413
375	Front or Back	A65-306	P65-970
1.0	Left or Right	A65-310	P65-397
2.0	Left or Right	A65-311	P65-398
250	Left or Right	A65-315	P65-403
1.0	Left or Right	A65-320	P65-397
2.0	Left or Right	A65-321	P65-398
250	Left or Right	A65-325	P65-403
500	Left or Right	A65-331	P65-971
5.25	Front or Back	A65-340	P65-453
150	Front or Back	A65-341	P65-412
500	Front or Back	A65-342	P65-418
140	Front or Back	A65-345	P65-963
25	Left or Right	A65-349	P65-400
5.4	Left or Right	A65-350	P65-391
25	Left or Right	A65-351	P65-406

Coils

To order specify "Coil" and give catalog number

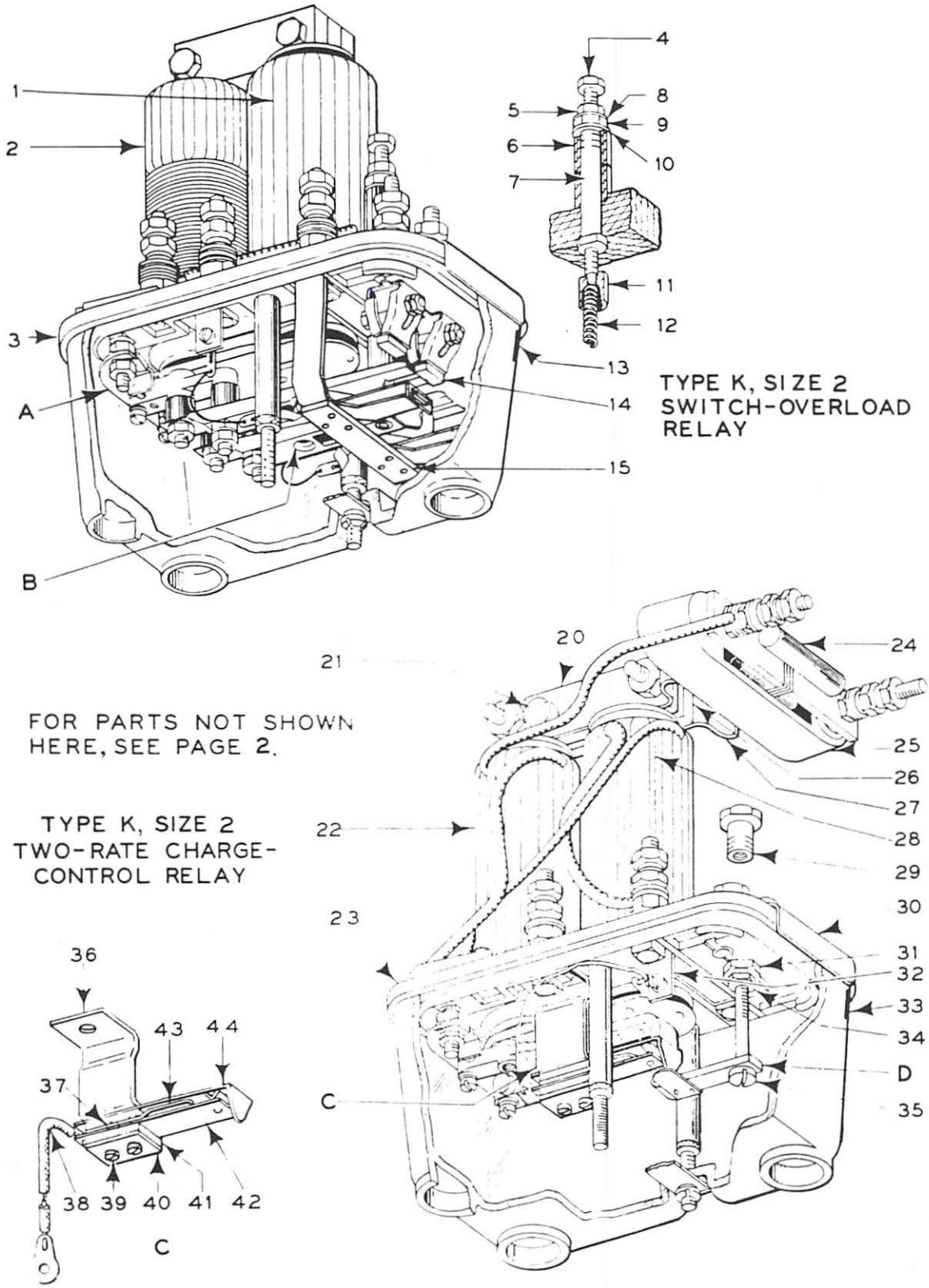
NOMINAL RES. OHMS	POSITION OF COIL ON RELAY	USED WITH CATALOG NO.	ORDERING REFERENCE CATALOG NUMBER
33	Left or Right	A65-352	P65-392
50	Left or Right	A65-353	P65-402
150	Left or Right	A65-354	P65-401
250	Left or Right	A65-355	P65-403
250	Left or Right	A65-356	P65-403
900	Left or Right	A65-357	P65-395
500	Left or Right	A65-358	P65-404
3.0	Left or Right	A65-359	P65-396
250	Left or Right	A65-365	P65-403
250	Left or Right	A65-366	P65-403
500	Left or Right	A65-367	P65-404
290	Left or Right	A65-375	P65-435
440	Left or Right	A65-376	P65-436
600	Left or Right	A65-377	P65-437
290	Left or Right	A65-385	P65-435
440	Left or Right	A65-386	P65-436
600	Left or Right	A65-387	P65-437
(27.5 Pri. (1.0 Sec.	Left or Right	A65-395	P65-430
350	Left	A65-405	P65-407
350	Left	A65-409	P65-407
400	Front	A65-415	P65-414
400	Left	A65-420	P65-393
400	Left	A65-425	P65-393
400	Front	A65-430	P65-414
250	Left	A65-435	P65-408
** 500	Left	A65-437	P65-404
250	Left	A65-438	P65-408
500	Left	A65-439	P65-404
350	Left	A65-440	P65-407
132	Front or back	A65-480	P65-415
2.0	Front	A65-500	P65-410

** for use with relay having aluminum slug.

Coils

To order specify "Coil" and give catalog number

NOMINAL RES. OHMS	POSITION OF COIL ON RELAY	USED WITH CATALOG NO.	ORDERING REFERENCE CATALOG NUMBER
2.0	Back	A65-500	P65-438
290	Left or Right	A65-501	P65-435
440	Left or Right	A65-505	P65-436
600	Left or Right	A65-507	P65-437
290	Left or Right	A65-515	P65-435
440	Left or Right	A65-519	P65-436
600	Left or Right	A65-523	P65-437
290	Left or Right	A65-560	P65-435
440	Left or Right	A65-561	P65-436
290	Left or Right	A65-563	P65-435
290	Left or Right	A65-564	P65-435
290	Left or Right	A65-565	P65-435
440	Left or Right	A65-566	P65-436



Type K, Size 2 switch-overload and two-rate charge-control relays.

Type K, Size 2 Switch-Overload and Two-Rate Charge-Control Relays

Parts List

For parts not listed here, see page 2.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	ARMATURE COMPLETE, for overload relay	P65-534
B	FINGER COMPLETE, with heavy-duty back contact. For references see page 64	
C	CONTACT GROUP COMPLETE, for two-rate charge-control relay	P65-797
D	ARMATURE COMPLETE, for two-rate charge-control relay	P65-535
1	COIL, front, 125 ohms	P65-422
2	COIL, back, .066 ohms	P65-441
3	COVER, for overload relay	P65-332
4	STUD, for relay adjustment	P65-356
5	NUT, for stud	P76-129
6	BUSHING, for stud	P65-226
7	SLEEVE, for stud	P65-389
8	WASHER, for nut Ref. 5	P76-247
9	NUT, for sleeve	P65-470
10	WASHER, for nut Ref. 9	P65-277
11	SEAT, for spring Ref. 12	P65-783
12	SPRING, for overload relay	P65-156
13	TEST DATA FORM, for switch-overload relay	P65-667
14	CONTACT, metal-to-metal	P65-647
15	SUPPORT COMPLETE	P65-972
20	YOKE, for use in position shown	P65-576
21	SCREW, for yokes	P65-596
21A	WASHER, lock, for above	P85-801
22	COIL, front or back, 250 ohms	P65-443
22A	As above, except 444 ohms	P65-451
22B	Same as Ref. 22, except 680 ohms	P65-449
22C	Same as Ref. 22, except 6620 ohms	P65-450
23	COVER, for two-rate charge-control relay	P65-333

Type K, Size 2 Switch-Overload and Two-Rate Charge-Control Relays

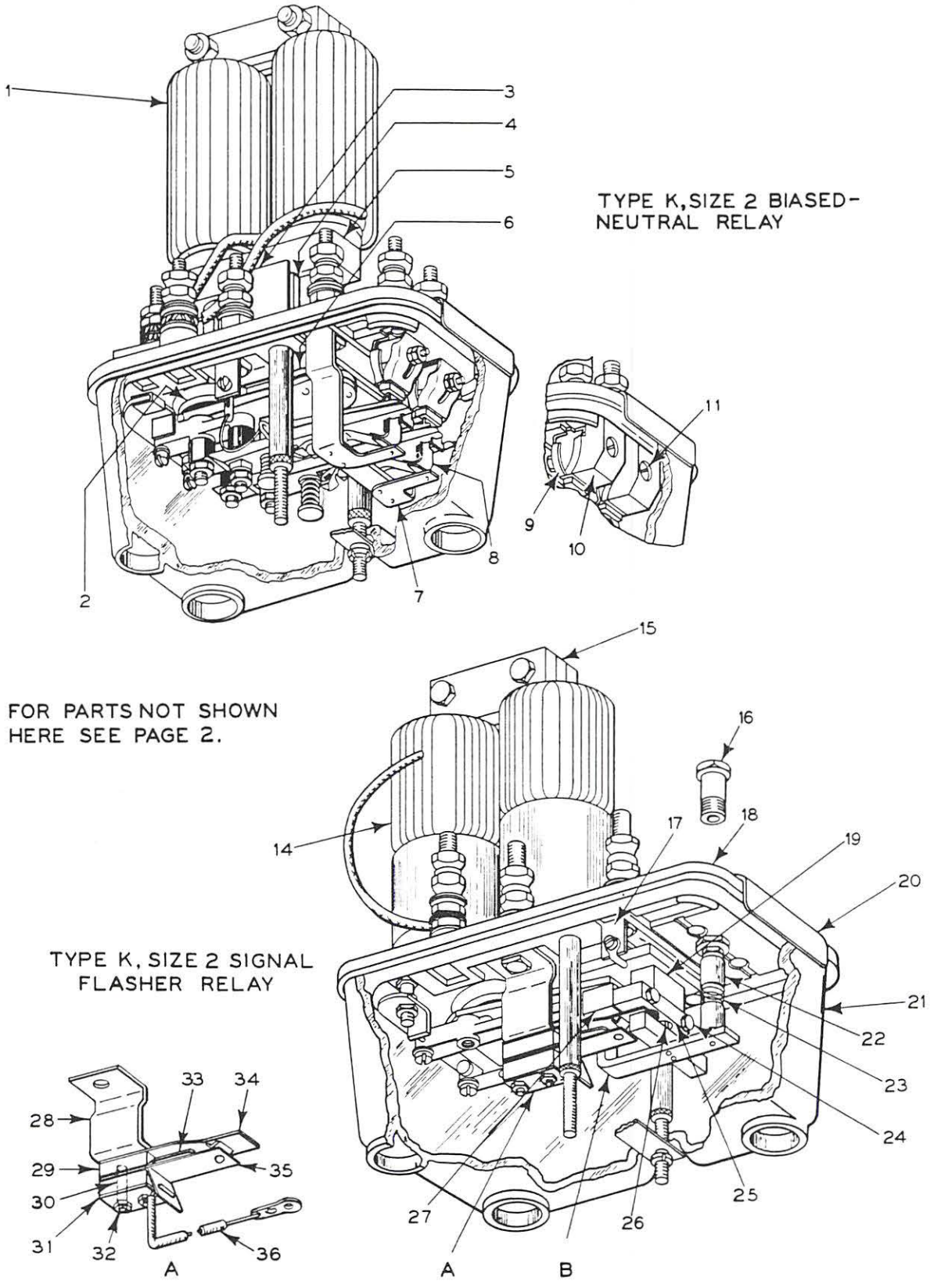
Parts List

For parts not listed here, see page 2.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
24	RESISTOR, 205 ohms, for use with 4 to 6 cells of battery	P65-814
24A	As above, except 220 ohms, for use with 7 to 10 and 10 to 14 cells of battery	P65-815
24B	Same as Ref. 24, except 865 ohms, for use with 50 to 57 cells of battery	P65-816
25	TERMINAL BLOCK	P65-222
26	YOKE, for use in position shown	P50-471
27	SUPPORT, for terminal block	P65-719
28	CORE COMPLETE, adjustable	P65-352
29	SLEEVE, for screw Ref. 35	P65-390
30	NAME PLATE, for two-rate charge-control relay	P65-136
30A	SCREW, for above	P62-419
31	NUT, for sleeve Ref. 29	P65-470
32	TERMINAL, for relay	P65-675
33	TEST DATA FORM, for two-rate charge-control relay	P65-664
34	NUT, for screw Ref. 35	P65-150
35	SCREW, stop for armature	P65-236
36	BRACKET, for contacts	P65-841
37	BUSHING, for screws	P65-837
38	CONNECTOR COMPLETE	P65-840
39	SCREW, for fastening fingers and insulation to bracket	P65-214
39A	NUT, for above	P65-499
39B	WASHER, for above	P62-406
40	WASHER, for screws	P65-301
41	INSULATION, for contact fingers	P65-500
42	CONTACT COMPLETE, lower	P65-259
43	STOP, for contacts	P65-781
44	CONTACT COMPLETE, upper	P65-260

Memoranda



Type K, Size 2 biased-neutral and signal flasher relays.

Type K, Size 2 Biased-Neutral and Signal Flasher Relays

Parts List

For parts not listed here, see page 2.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	CONTACT GROUP COMPLETE, left-hand	P65-842
A1	As above, except right-hand	P65-843
B	ARMATURE COMPLETE, for signal flasher relay	P65-536
1	COIL, front or back, 150 ohms	P65-412
1A	COIL, front or back, 250 ohms	P65-413
1B	COIL, front or back, 500 ohms	P65-418
1C	COIL, front or back, 50 ohms	P65-969
2	CORE, for use in position shown	P65-343
3	CLAMP, for magnet	P65-824
4	MAGNET	P65-685
5	SHUNT STRIP, front or back	P65-823
6	CORE, for use in position shown	P65-355
7	SUPPORT, back contact, consists of two supports with contacts riveted to an insulation plate	P65-641
7A	As above, except for relay with EHD contacts	P65-642
8	FINGER COMPLETE, for references see page 64	
9	FRONT HOLDER	P65-721
10	MAGNET, for EHD contacts	P65-803
11	SCREW, for magnets and holders	P65-762
11A	NUT, for above	P65-619
14	COIL, front or back, 293 ohms	P65-439
14A	As above, except, 410 ohms	P65-440
15	CORE, for front coil	P65-354
15A	CORE, for rear coil	P65-334
16	SLEEVE, for stud	P65-390
17	TERMINAL	P65-675
18	COVER, for signal flasher relay	P65-333
19	MAGNET	P62-397
20	NAME PLATE	P65-138
20A	SCREW, for above	P62-419

Type K, Size 2 Biased-Neutral and Signal Flasher Relays

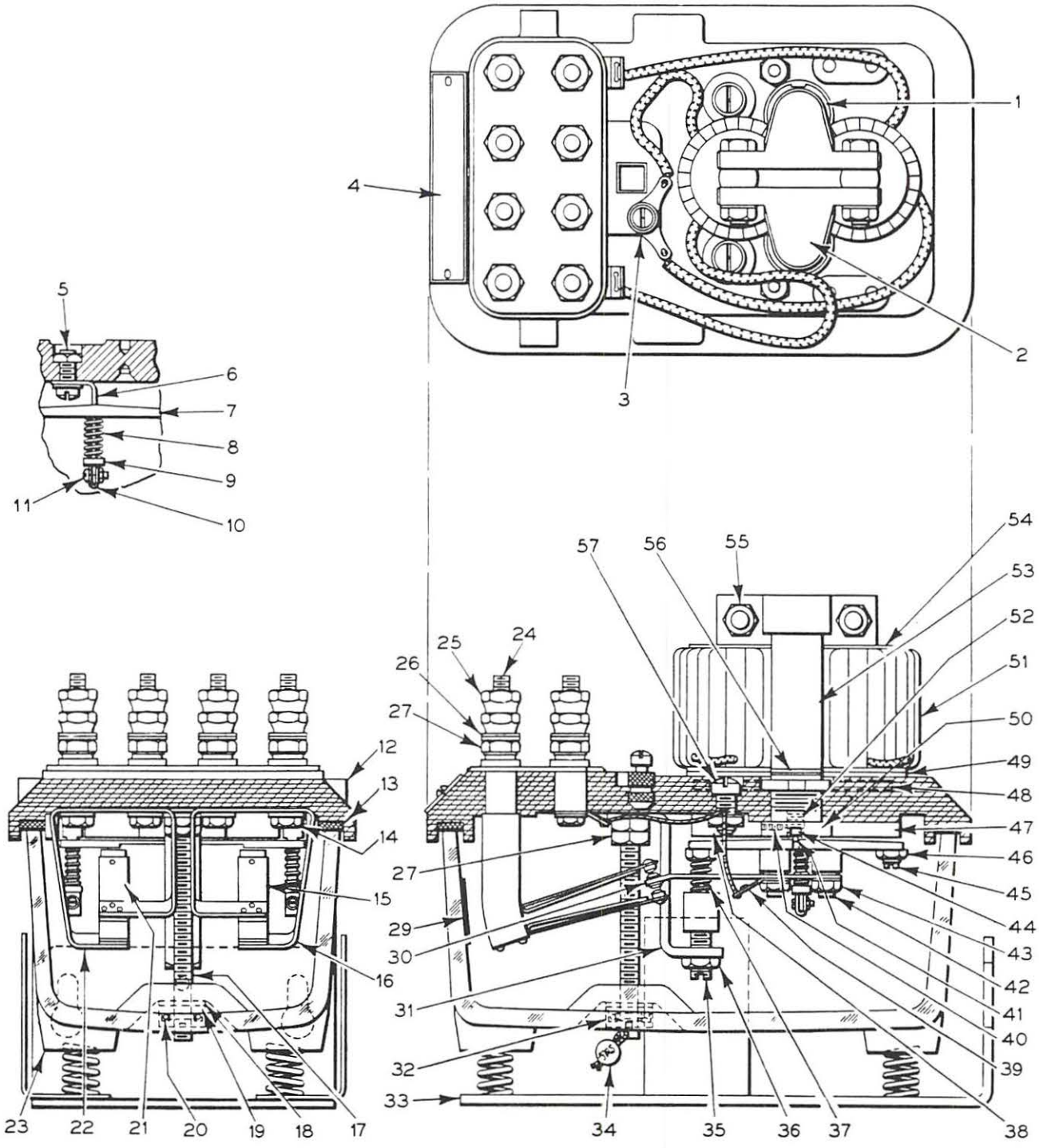
Parts List

For parts not listed here, see page 2.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
21	TEST DATA FORM, for signal flasher relay	P65-666
22	STUD, for spring	P65-357
23	SPRING, for armature	P65-161
24	SCREW, for stop	P62-194
24A	WASHER, plate, for above	P62-262
25	BLOCK, for magnet	P65-229
26	SCREW, for block and magnet	P62-250
27	STOP, for armature	P65-282
28	BRACKET, right - or left-hand	P65-841
29	INSULATION, for contact fingers	P65-501
30	BUSHING, for screws	P65-227
31	WASHER, for screws	P65-301
32	SCREW, for fastening fingers and insulation to bracket	P65-213
32A	NUT, for above	P65-499
32B	WASHER, lock, for above	P62-406
33	STOP, for contact	P65-781
34	CONTACT COMPLETE, upper	P65-263
35	CONTACT COMPLETE, lower	P65-264
36	CONNECTOR COMPLETE	P65-556

Memoranda



Type K, Size 2 code responsive relay.

Type K, Size 2 Code Responsive Relay

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	NUT, spanner, for locking cores to cover	P65-288
2	YOKE, for permanent magnets and cores	P65-574
3	SCREW, for coil leads	P65-235
4	NAME PLATE, for relay	P65-135
4A	SCREW, for above	P62-419
5	SCREW, for mounting support	P62-214
5A	NUT, for above	P76-129
5B	WASHER, lock, for above	P65-973
6	SUPPORT, for armature	P65-482
7	ARMATURE, only	P65-364
8	SPRING, for armature	P65-155
9	WASHER, cup, guide for spring	P65-297
10	STOP, for armature	P65-793
11	SCREW, for fastening stop to support	P62-443
11A	NUT, for above	P65-271
11B	WASHER, lock, for above	P62-408
12	COVER, for relay	P65-320
13	GASKET, for cover	P65-255
14	SCREW, binding post	P65-516
14A	WASHER, lock, for above	P85-801
15	FINGER COMPLETE, upper right	P65-787
16	FINGER COMPLETE, lower right	P65-786
17	SCREW, for supporting glass case	P65-615
18	WASHER, rubber, for glass case	P65-182
19	WASHER, steel, for backing washer Ref. 18	P50-157
20	SPRING, for nut Ref. 32	P65-162
21	FINGER COMPLETE, upper left	P65-788
22	FINGER COMPLETE, lower left	P65-785
23	GLASS CASE	P65-495
24	SCREW, used as terminal post	P65-115

Type K, Size 2 Code Responsive Relay

Parts List

Order by catalog number and name shown in bold type

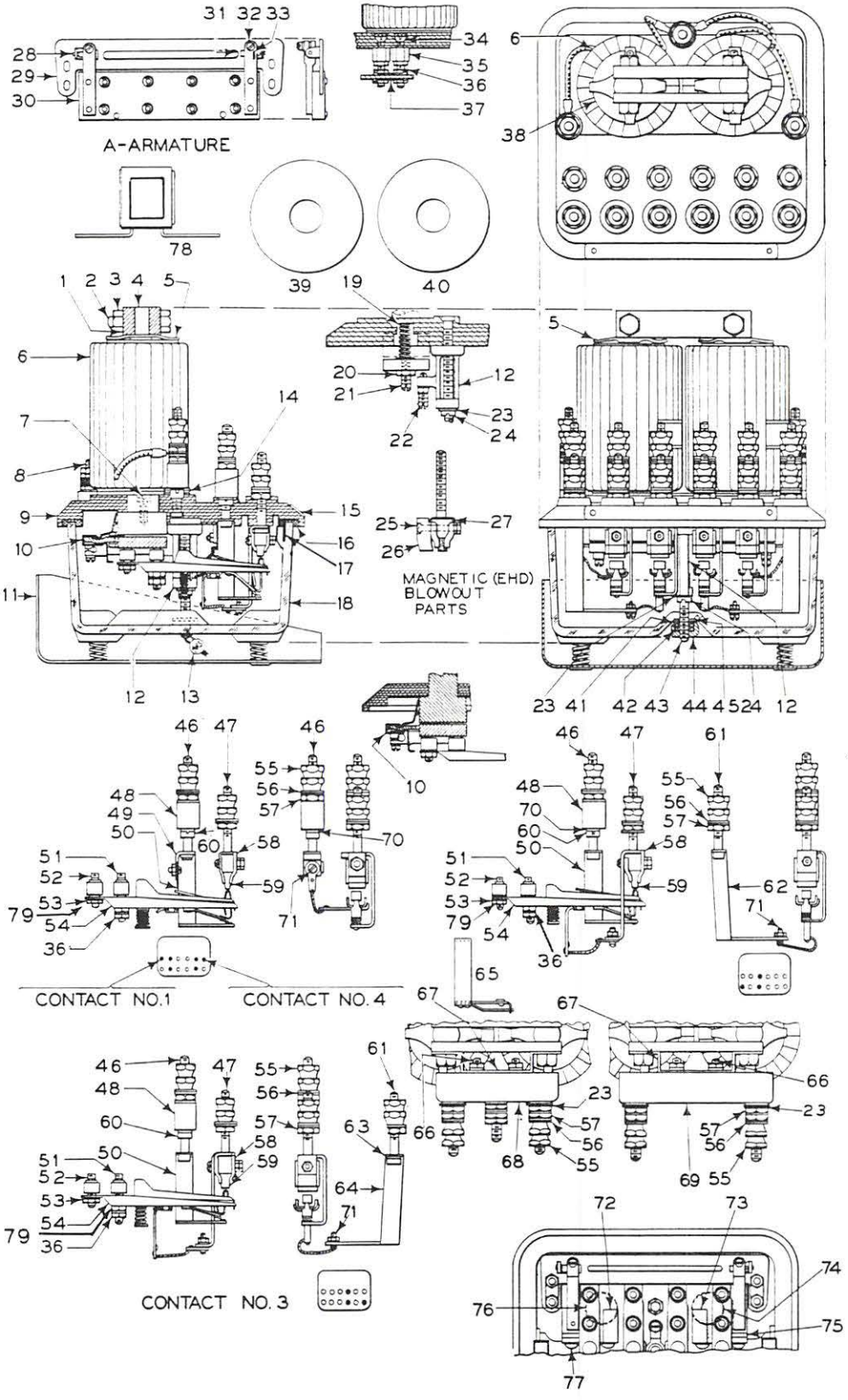
REF.	NAME	CATALOG NUMBER
25	NUT, for terminal posts	P76-131
26	WASHER, for terminal posts	P76-108
27	NUT, for terminal posts, also for screw Ref. 17	P62-333
29	TEST DATA FORM	P65-660
30	FINGER COMPLETE	P65-756
31	SUPPORT, for armature return spring	P65-483
32	NUT, knurled, for fastening glass case to cover	P65-163
33	BRACKET, for mounting relay	P65-566
34	SEAL, for relay	P62-299
35	SCREW, cup, for armature return spring	P65-778
36	NUT, for locking screw Ref. 35	P62-222
37	SPRING, armature return, for track relays	P65-827
37A	As above, except for line relays	P65-806
38	CORE COMPLETE, necked	P65-358
39	CONNECTOR, for finger	P65-547
40	SCREW, set, for locking screw Ref. 52	P65-141
41	NEEDLE, bearing for armature	P65-789
42	INSULATOR, for fingers	P65-560
43	NUT, for insulators	P76-129
43A	WASHER, lock, for above	P65-973
44	BEARING, for armature	P65-790
45	SCREW, stop for armature	P62-198
46	NUT, for screw Ref. 45	P65-733
47	CORE COMPLETE, unnecked	P65-359
48	NUT, spanner, for fastening cores to cover	P65-287
49	WASHER, felt, for use under coils	P65-189
50	POLE, for permanent magnet	P65-725
51	COIL, front, or back, 0.08 ohms	P65-447
51A	COIL, front, or back, 90.0 ohms	P65-448
51B	COIL, front, or back, 15.0 ohms	P65-452

Type K, Size 2 Code Responsive Relay

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
52	SCREW, set, for armature air gap	P65-220
53	MAGNET	P65-683
54	WASHER, for top of coils	P62-293
55	SCREW, for fastening yokes to cores	P50-236
55A	NUT, for above	P65-142
56	WASHER, rubber, for magnets	P65-184
57	SCREW, binding terminal for connectors	P65-627
57A	NUT, for above	P65-585
57B	WASHER, lock, for above	P81-206



Type K, Size 4 relays.

Type K, Size 4 Relays

Common Parts List

This list covers repair parts for all Type K, size 4 neutral relays except special parts for the following:

Biased-neutral see page 28
Lamp-control see page 32
Power-transfer see page 28
Magnetic-stick see page 36
Flasher, Highway Crossing see page 40
Flasher, Highway Crossing, electronically driven see page 39
Retained-neutral see page 32
Code transmitters see page 80

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
*A	ARMATURE COMPLETE, for Size 4 relays except power-transfer, biased-neutral, magnetic-stick, lamp-control, quick-crossover, retained-neutral, series-overlay, electronic flasher	P65-521
*A1	As above, except for quick-crossover relay	P65-525
*A2	Same as Ref. A, except for series-overlay	P65-522
1	YOKE, for cores, two required, for all Size 4 relays, except biased-neutral and magnetic stick	P65-579
2	SCREW, for fastening yokes to cores	P50-128
3	NUT, for screw Ref. 2	P85-205
4	CORE, for coils, for all Size 4 relays except biased-neutral and quick-crossover	P65-335
5	WASHER, spring, for top of coils	P65-485
6	COIL, see pages 7 to 9 for ordering information	
7	SCREW, for fastening cores to cover, for all Size 4 relays except magnetic-stick and power-transfer	P62-214
8	SCREW, coil connection	P65-100
8A	NUT, for above	P65-585
8B	WASHER, lock, for above	P81-206
8C	WASHER, for above	P76-108
9	COVER, only, for all Size 4 relays except power-transfer, retained-neutral, magnetic-stick, lamp-control, quick-crossover and electronically driven flasher	P65-324
9A	As above, except for quick-crossover and electronically driven flasher relays	P65-325
10	PLATE, relief gap, for track relays	P65-283
11	BRACKET, for wall - or - shelf-mounting	P65-293
12	STOP, armature	P65-819
13	SEAL, for glass case	P62-299
14	WASHER, felt, for use under coils	P65-187

* Give catalog or drawing number of relay

Type K, Size 4 Relays

Common Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
15	NAME PLATE, for all Size 4 relays except retained-neutral, magnetic-stick, lamp control.	P65-122
15A	As above, except for coded track repeater	P65-134
15B	SCREW, for above	P62-419
16	GASKET, rubber, for case.	P65-253
17	FORM, test data	P65-659
18	CASE, polycarbonate, for relay	P65-488
19	SPRING, for armature of quick-crossover relay	P65-159
20	NUT, for screw Ref. 21	P62-410
21	SCREW, for spring Ref. 19	P65-734
22	SCREW, for armature stop Ref. 12	P62-150
23	WASHER, lock, for armature stop	P85-801
24	NUT, spanner, for fastening armature stop to screw Ref. 43	P65-588
25	SCREW, for magnets and holders	P65-762
25A	NUT, for above	P65-619
26	MAGNET, for EHD contact	P65-803
27	HOLDER, front, for EHD contacts	P65-721
28	TRUNNION, for armature	P65-459
29	BRACKET, for supporting armature	P65-712
*30	ARMATURE COMPLETE, includes brackets for hinging riveted in place, for all Size 4 relays except power-transfer, biased-neutral, magnetic-stick, lamp-control, quick-crossover and electronic flasher	P65-365
*30A	As above, except for quick-crossover relay.	P65-367
*30B	Same as Ref. 30, except for electronic flasher	P65-958
31	TRUNNION, headless, for armature	P65-458
32	SCREW, for bracket on armature	P65-112
32A	WASHER, lock, for above	P62-402
33	PIN, for trunnion	P65-170
34	SCREW, for fastening armature support to cover	P65-111
35	NUT, spacer, for screw Ref. 34	P65-149
36	NUT, 11/32" hex for screw Ref. 34, also for screws on insulators, Ref. 51	P65-150

* Give catalog or drawing number of relay

Type K, Size 4 Relays

Common Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
37	WASHER, plate, for screws Ref. 34	P65-298
38	WASHER, fibre, for use between washer Ref. 5 and coil	P65-455
39	WASHER, copper, for slow-release relays	P65-172
40	WASHER, fibre, for slow-release relays	P65-145
41	WASHER, for nut Ref. 44	P50-157
42	SPRING, for nut Ref. 44	P65-162
43	SCREW, for fastening case to cover	P65-614
44	NUT, knurled, for screw Ref. 43	P65-163
45	WASHER, rubber, for use next to case, requires washer Ref. 41	P65-182
46	SCREW, one required as terminal for contact finger in spaces 1 and 4, also one required for back contact	P65-105
47	SCREW, for front contact	P65-504
48	INSULATOR, for terminal post Ref. 46	P65-224
49	TERMINAL, for contacts Nos. 1 and 4	P65-675
50	SUPPORT, back contact, has metal contact for all spaces except close-before-open contact of secondary relay of primary-secondary combination	P65-633
50A	As above, except heavy-duty	P65-635
51	INSULATOR, includes long screw for fastening finger to armature	P62-330
52	INSULATOR, includes short screw for fastening finger to armature	P65-557
53	WASHER, lock, for screws on insulators	P65-973
54	FINGER COMPLETE, for ordering references see page 64	
55	NUT, for terminal posts	P76-131
56	WASHER, for terminal posts	P76-108
57	NUT, for terminal posts	P65-585
58	HOLDER, back, for front contact	P65-720
58A	HOLDER, front, for back contact	P65-836
58B	SCREW, for above	P65-763
58C	NUT, 3/32" thick for above	P65-498
58D	NUT, 1/8" thick, for holder	P65-211
59	CONTACT, front, metal-impregnated-carbon. For all relays, except close-before-open contact on secondary relay of primary-secondary combination	P65-256

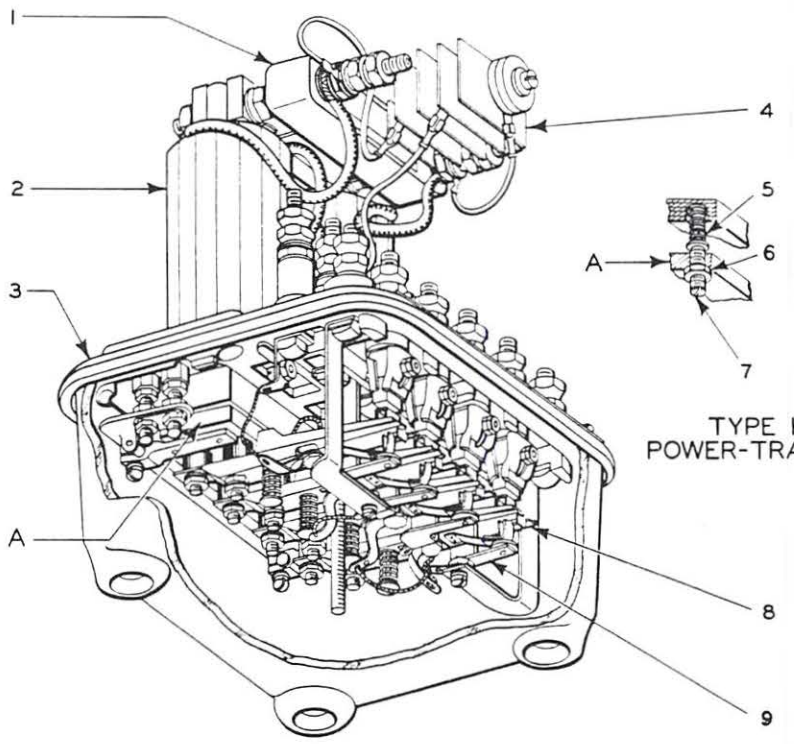
Type K, Size 4 Relays

Common Parts List

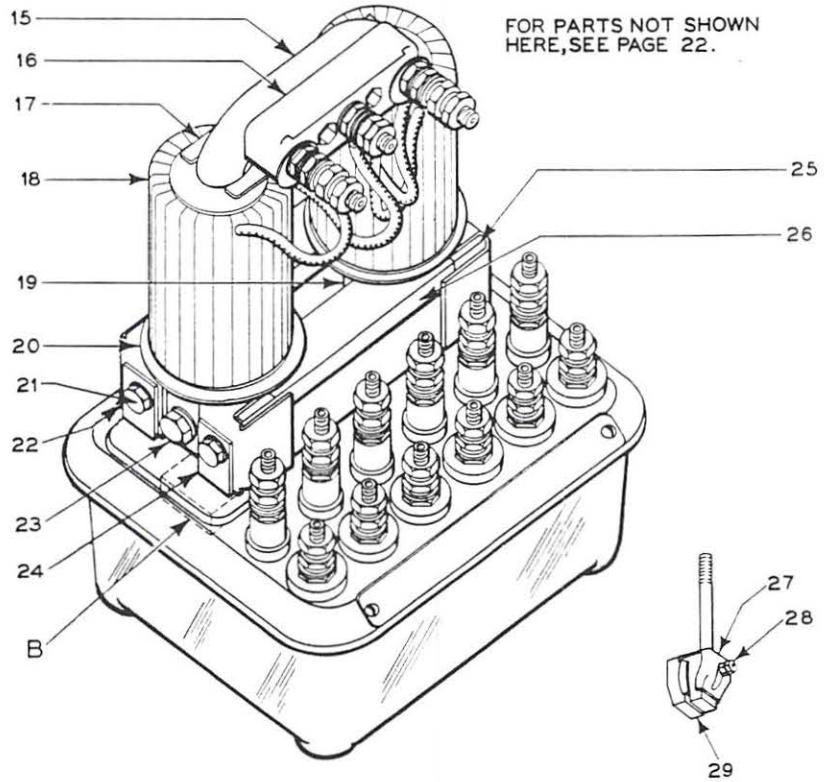
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
59A	As above, except for secondary relay	P65-647
60	NUT, spanner, for terminal posts	P65-588
61	SCREW, for contacts Nos. 2 and 3	P65-102
62	TERMINAL, long, for contact No. 2	P65-670
63	WASHER, lock, for terminal posts	P65-179
64	TERMINAL, long, for contact No. 3	P65-669
65	SUPPORT, back contact, for close-before-open contact on secondary relay of primary secondary combination	P65-637
66	SCREW, for fastening terminal block to support	P65-208
66A	NUT, for above	P65-150
66B	WASHER, lock, for above	P65-973
67	SUPPORT, for terminal block	P65-716
68	TERMINAL BLOCK, three post	P65-598
69	TERMINAL BLOCK, two post for power-transfer relay	P65-221
70	WASHER, lead, for terminal posts	P65-190
71	SCREW, for terminal	P65-212
71A	NUT, for above	P65-211
71B	WASHER, lock, for above	P62-406
72	POLE SHOE, for quick-crossover relay	P65-835
73	POLE SHOE, for quick-crossover relay	P65-834
74	CORE, only, for quick-crossover relay	P65-833
75	SPACER	P65-838
76	CORE, only, for quick-crossover relay	P65-832
77	SCREW, for spacers	P65-839
77A	WASHER, lock, for above	P65-973
78	RECTIFIER, Type B 1/4 for Size 4, light-out relays	A53-135
79	NUT, 3/8" hex., for screws on insulators, Ref. 52	P76-129

Memoranda



TYPE K, SIZE 4
POWER-TRANSFER RELAY



FOR PARTS NOT SHOWN HERE, SEE PAGE 22.

TYPE K, SIZE 4
BIASED-NEUTRAL RELAY

Type K, Size 4 power-transfer and biased-neutral relays.

Type K, Size 4 Power-Transfer and Biased-Neutral Relays

Parts List

For parts not listed here, see page 22.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	ARMATURE COMPLETE, for power-transfer relay. For references see page 24	P65-522
B	ARMATURE COMPLETE, for biased-neutral relay. For references see page 24	P65-523
1	TERMINAL BLOCK, for relay	P65-221
2	COIL, right or left, 50 ohms	P65-402
3	COVER, for power-transfer relay	P65-327
4	RECTIFIER COMPLETE, Type S 1/4, for 10 volt power-transfer relay	A53-541
5	SPRING, for armature	P65-157
6	NUT, hex., for screw Ref. 7	P62-410
7	SCREW, for adjusting power-transfer relay	P65-735
8	FINGER COMPLETE, heavy-duty front and back, for references see page 88	
9	SUPPORT, back contact, for power-transfer relay	P65-635
15	CORE, for biased-neutral relay	P65-340
16	TERMINAL BLOCK COMPLETE, with three posts, for biased-neutral relay	P65-599
17	SPRING, for top of coils	P65-276
18	COIL, right or left 33 ohms	P65-392
18A	As above, except 1.0 ohms	P65-397
18B	Same as Ref. 18 except 2.0 ohms	P65-398
18C	Same as Ref. 18, except 150 ohms	P65-401
18D	Same as Ref. 18, except 250 ohms	P65-403
18E	Same as Ref. 18, except 500 ohms	P65-404
19	MAGNET, for biased-neutral relay	P65-684
20	WASHER, fibre, for use under coils	P65-145
21	SCREW, for clamp and plate	P65-267
21A	WASHER, lock, for above	P73-308
22	CLAMP, for magnets	P65-820
23	SCREW, for fastening cores to bracket	P65-210

Type K, Size 4 Power-Transfer and Biased-Neutral Relays

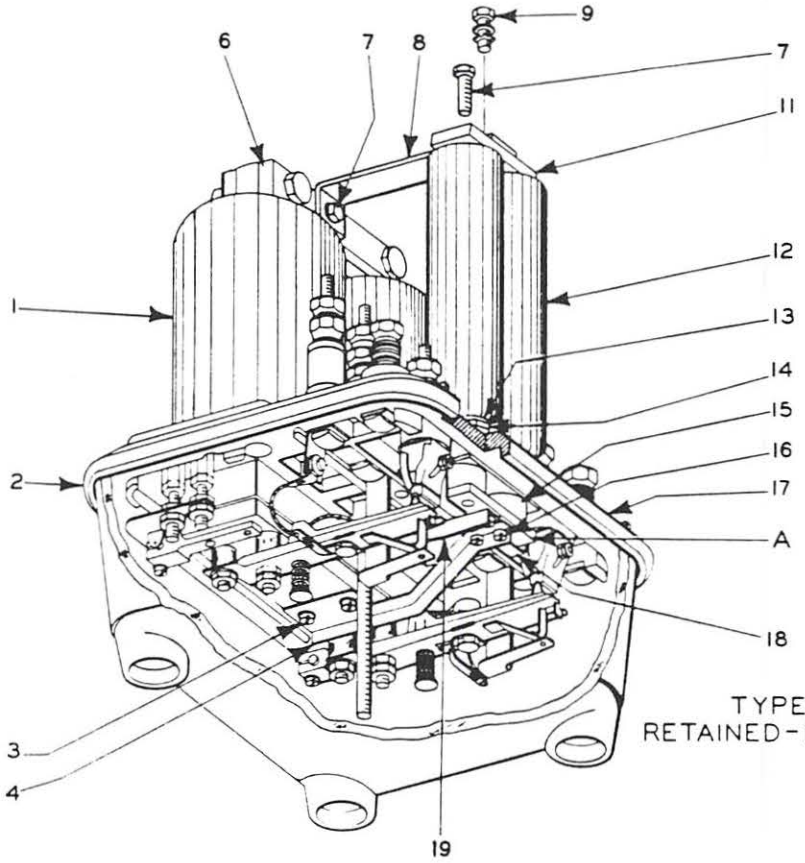
Parts List

For parts not listed here, see page 22.

Order by catalog number and name shown in bold type

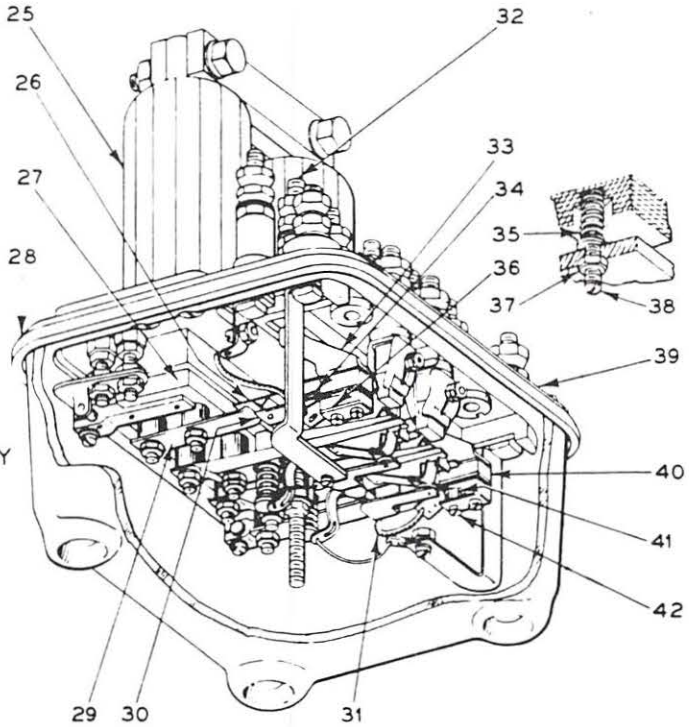
REF.	NAME	CATALOG NUMBER
23A	WASHER, lock, for above	P65-729
24	PLATE, reinforcement for top of relay	P65-515
25	BRACKET, for biased-neutral relay	P65-821
26	LEAKAGE STRIP, for biased-neutral relay	P65-822
27	FRONT HOLDER, for contact	P65-721
28	SCREW, for magnets and holders	P65-762
28A	NUT, for above	P65-619
29	MAGNET, for magnetic blowout	P65-803

Memoranda



TYPE K, SIZE 4
RETAINED-NEUTRAL RELAY

FOR PARTS NOT SHOWN HERE SEE PAGE 22.



TYPE K, SIZE 4
LAMP-CONTROL RELAY

Type K, Size 4 retained-neutral and lamp-control relays.

Type K, Size 4 Retained-Neutral and Lamp-Control Relays

Parts List

For parts not listed here, see page 22.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	ARMATURE COMPLETE, retained-neutral	P65-377
1	COIL, right or left, 160 ohms	P65-429
2	COVER, for relay	P65-328
3	SCREW, for fastening retaining armature to neutral armature	P65-739
3A	WASHER, lock, for above	P65-973
4	SUPPORT, right hand, for armature	P65-363
6	YOKE, drilled for screw Ref. 7	P65-582
7	SCREW, for fastening bracket Ref. 8 to yoke	P65-241
7A	WASHER, lock, for above	P65-732
8	BRACKET, reinforcement between coils	P65-617
9	SCREW, for fastening bracket to yoke Fig. 11	P65-240
9A	WASHER, lock, for above	P65-732
9B	WASHER, for above	P62-196
11	YOKE, for coils Ref. 12	P65-579
12	COIL, right or left, 0.35 ohms	P65-445
13	WASHER, felt, for use under coils Ref. 12	P65-292
14	NUT, for cores	P62-204
15	CORE, for coils Ref. 12	P65-339
16	SCREW, for fastening supports to armature	P65-502
17	NAME PLATE	P65-131
17A	SCREW, for above	P62-419
18	STOP, back, for retaining armature	P65-758
19	SUPPORT, left hand, for armature	P65-362
25	COIL, right or left, 150 ohms	P65-423
26	CONTACT COMPLETE, upper	P65-263
27	ARMATURE COMPLETE, for references see page 22	P65-524
28	COVER, for relay	P65-325
29	ARM, for operating contact	P65-487
30	CONTACT COMPLETE, lower	P65-264
31	CONNECTOR COMPLETE	P65-556

Type K, Size 4 Retained-Neutral and Lamp-Control Relays

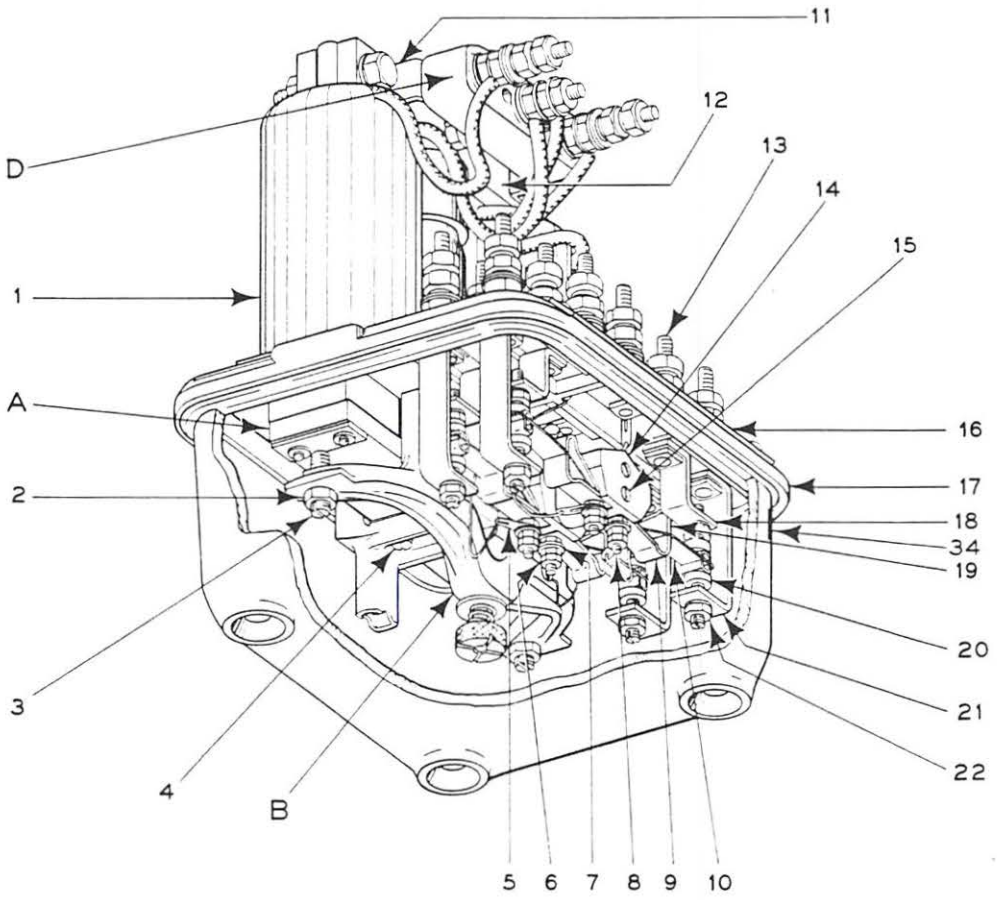
Parts List

For parts not listed here, see page 22.

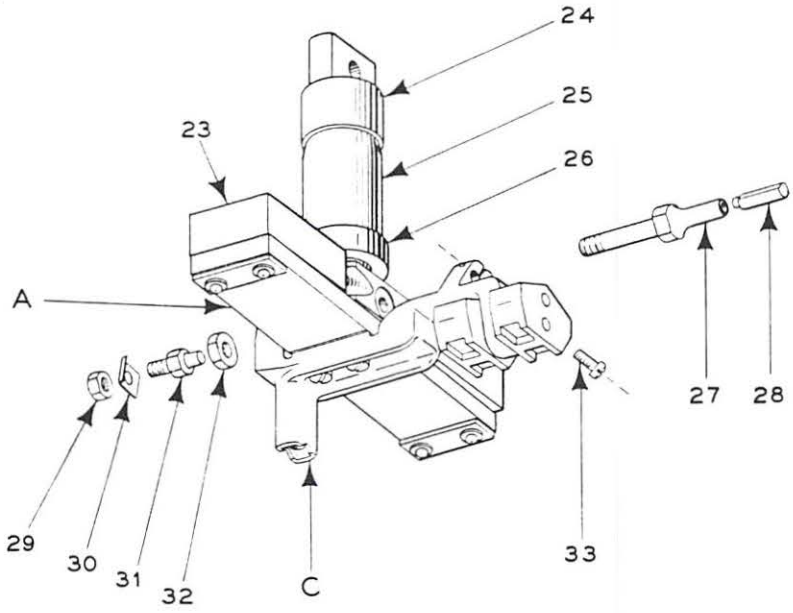
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
32	SCREW, used as terminal post	P65-105
33	SUPPORT, for contact	P65-484
34	STOP, for contact	P65-781
35	SPRING, for armature	P65-158
36	WASHER, for insulations	P65-301
37	NUT, for screw Ref. 38.	P62-410
38	SCREW, for adjusting armature	P65-734
39	NAME PLATE	P65-133
39A	SCREW, for above	P62-419
40	INSULATION, for contacts	P65-501
41	BUSHING, insulation, for screws	P65-227
42	SCREW, for fastening fingers to insulation	P65-213
42A	NUT, for above	P65-499
42B	WASHER, lock, for above	P62-406

Memoranda



FOR PARTS NOT SHOWN HERE, SEE PAGE 22.



Type K, Size 4 magnetic-stick relay.

Type K, Size 4 Magnetic-Stick Relay

For parts not listed here, see page 22.

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	ARMATURE COMPLETE, with residuals and insulation	P65-379
B	SUPPORT COMPLETE, for relay	P65-751
C	BEARING COMPLETE, for relay	P65-770
D	TERMINAL BLOCK COMPLETE, with three posts	P65-601
1	COIL, right or left, 25 ohms	P65-400
1A	As above, except, 500 ohms	P65-404
2	NUT, for stop screw Ref. 3	P62-223
3	SCREW, stop, for armature	P65-205
4	SCREW, for fastening armature to bearing	P76-114
4A	WASHER, lock, for above	P85-390
5	CONNECTOR COMPLETE, for fingers	P65-539
6	NUT, for fingers	P65-498
7	WASHER, for nut Ref. 6	P62-696
8	SCREW, for fingers	P65-763
9	SUPPORT, lower, for fingers	P65-481
10	FINGER COMPLETE, for relay	P65-691
11	SUPPORT, for terminal block	P65-718
12	YOKE, for relay	P65-578
13	SCREW, used as terminal post	P65-102
14	CONTACT BLOCK, for fingers	P65-606
15	SCREW, for mounting contact block	P65-307
15A	NUT, for above	P65-304
15B	WASHER, lock, for above	P65-300
16	NAME PLATE, for relay	P65-137
16A	SCREW, for above	P62-419
17	COVER, for relay	P65-318
18	SUPPORT, for upper contacts	P65-477
19	SUPPORT, upper, for fingers	P65-480
20	CONTACT, for relay	P65-562
21	SUPPORT, for lower contacts	P65-478
22	NUT, for contacts	P65-150

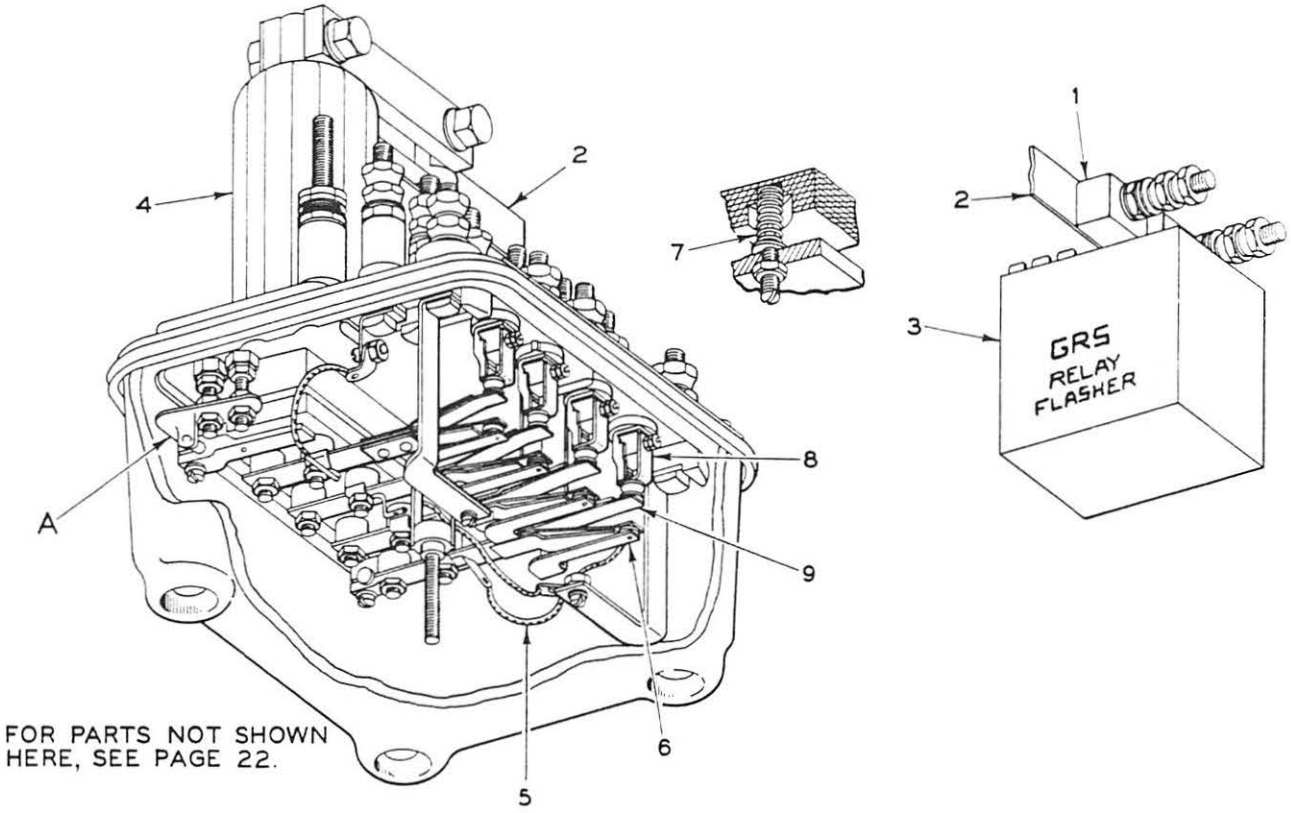
Type K, Size 4 Magnetic-Stick Relay

For parts not listed here, see page 22.

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
23	CORE, for relay	P65-341
24	ADAPTER, upper, for magnet	P65-825
25	MAGNET, for relay	P65-686
26	ADAPTER, lower, for magnet	P65-826
27	SHAFT, for bearing Ref. C	P65-795
28	TRUNNION, front, for bearing Ref. C	P65-460
29	NUT, for trunnion Ref. 31	P65-631
30	WASHER, lock, for nut	P65-193
31	TRUNNION, rear, for bearing Ref. C	P65-462
32	NUT, for shaft Ref. 27	P65-237
33	SCREW, for clamping trunnion Ref. 28	P65-828
33A	WASHER, lock, for above	P62-403
34	TEST DATA FORM	P65-665



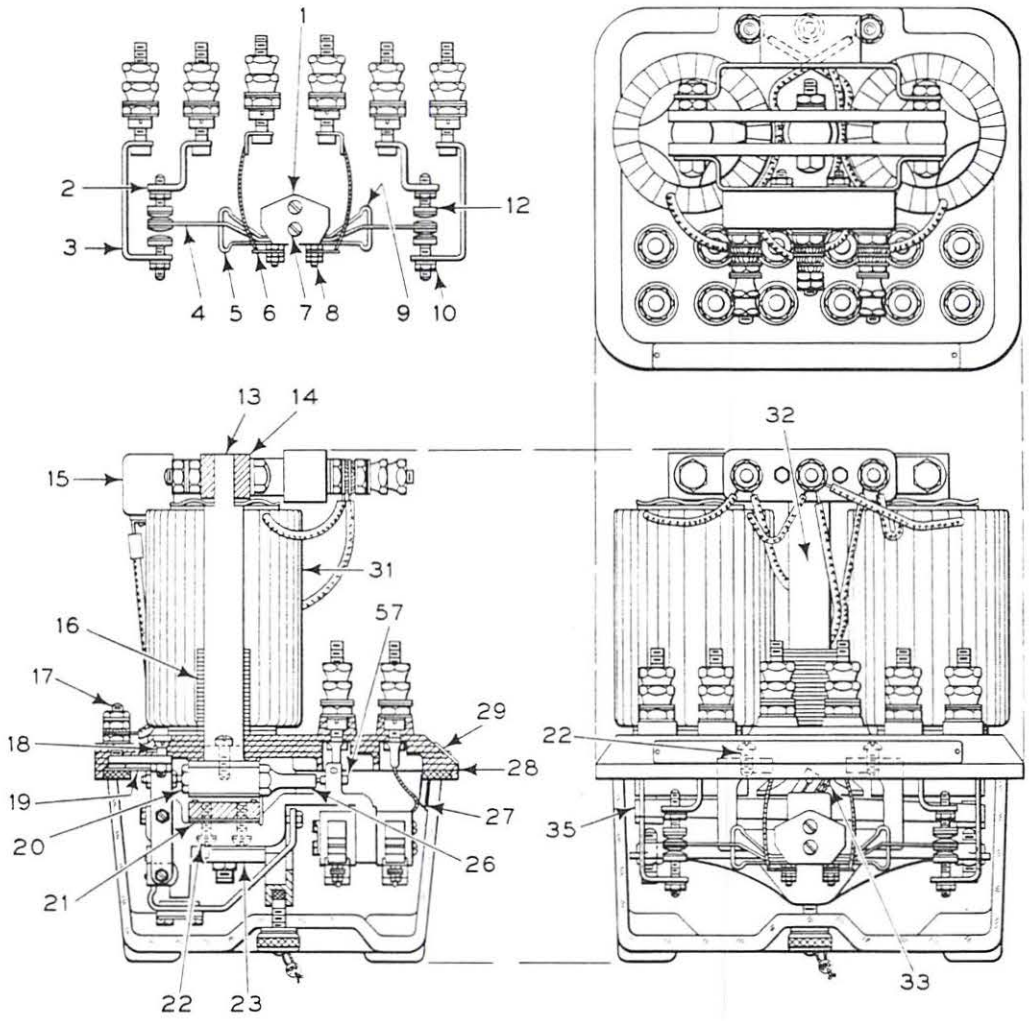
FOR PARTS NOT SHOWN HERE, SEE PAGE 22.

Type K, Size 4 Electronically Driven Highway Crossing Flasher

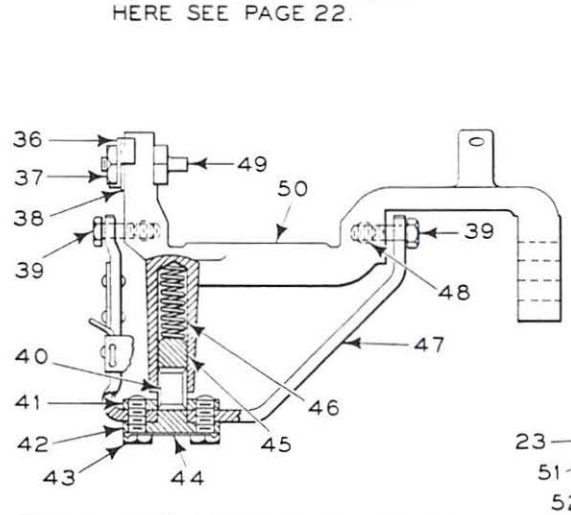
For parts not listed here, see page 22.

Order by catalog number and name shown in bold type

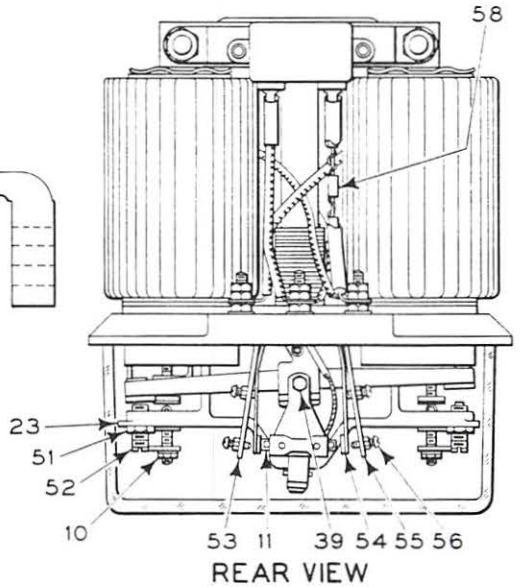
REF.	NAME	CATALOG NUMBER
A	ARMATURE COMPLETE, for references see page 22.	P65-960
1	TERMINAL BLOCK COMPLETE.	P76-366
2	SUPPORT, for terminal block	P65-953
3	RELAY FLASHER MODULE, 40-45 pulses per min	P62-769
4	COIL, 17.0 ohms	P65-952
5	CONNECTOR	P65-961
6	SUPPORT COMPLETE	P65-954
7	SPRING, for armature	P65-951
8	CONTACT COMPLETE	P65-955
9	FINGER COMPLETE	P65-956



FOR PARTS NOT SHOWN HERE SEE PAGE 22.



ENLARGED VIEW OF BEARING



REAR VIEW

Type K, Size 4 flasher relay.

Type K, Size 4 Flasher Relay

Parts List

For parts not listed here, see page 22.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	BLOCK, contact, for fingers	P65-606
2	SUPPORT, upper, for contacts Ref. 12	P65-477
3	SUPPORT, for contacts Ref. 12	P65-478
4	FINGER, with metal contact	P65-844
5	SUPPORT, lower, for fingers	P65-481
6	CONNECTOR, for contacts	P65-539
7	SCREW, for fastening block to bearing	P65-307
7A	NUT, for above	P65-304
7B	WASHER, lock, for above	P65-300
8	SCREW, for fastening fingers and supports to block	P65-763
8A	WASHER, for above	P62-696
8B	NUT, for above	P65-498
9	SUPPORT, upper, for fingers	P65-480
10	NUT, for fastening contacts to supports	P65-150
10A	WASHER, lock, for above	P65-973
11	CONTACT, only, for support Ref. 47	P65-609
12	CONTACT, only	P65-646
13	CORE, for relay	P65-335
14	YOKE, for cores	P65-579
15	CAPACITOR COMPLETE	P65-791
16	WASHER, copper	P62-155
17	SCREW	P65-309
17A	NUT, for above	P65-150
17B	WASHER, for above	P62-196
18	SCREW, for fastening supports to cover	P65-203
18A	NUT, for above	P65-150
18B	WASHER, lock, for above	P65-973
19	STRIP, insulation, for relay	P65-280
20	NUT, for shaft	P65-237
21	SHIM, .002" thick, as required	P65-743
21A	As above, except .005", as required	P65-744

TYPE K, SIZE 4 FLASHER RELAY

Parts List

For parts not listed here, see page 22.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
21B	Same as Ref. 21, except .010" thick, as required	P65-745
22	SCREW, for fastening armature to bearing, also for fastening support to cover	P71-115
22A	WASHER, lock, for above	P65-973
23	SUPPORT, stop for armature, includes stud for holding case to cover	P65-751
26	SHAFT, for bearing, includes trunnions and nut	P65-796
27	TEST DATA FORM	P65-661
28	COVER, for relay	P65-318
29	NAME PLATE	P65-129
29A	SCREW, for above	P62-419
31	COIL, right or left, 260 ohms	P65-424
31A	As above, except 400 ohms	P65-393
31B	Same as Ref. 31, except 500 ohms	P65-394
32	CORE, for relay	P65-337
33	SCREW, for fastening bearing to trunnion	P65-828
33A	WASHER, lock, for above	P62-403
35	ARMATURE COMPLETE, includes insulation and residuals riveted in place	P65-379
36	WASHER, lock, for trunnion nut	P65-193
37	NUT, for trunnion	P65-631
38	WASHER, for nut Ref. 37	P65-469
39	SCREW, for support Ref. 47	P65-771
40	TOGGLE	P65-772
41	BLOCK, for toggle	P65-768
42	PLATE, for toggle	P65-774
43	SCREW, for fastening plate to block	P65-108
44	WASHER, lock, for screws Ref. 43	P65-298
45	PLUNGER, for toggle	P65-773
46	SPRING, for plunger	P65-153
47	SUPPORT, includes contacts riveted in place	P65-748

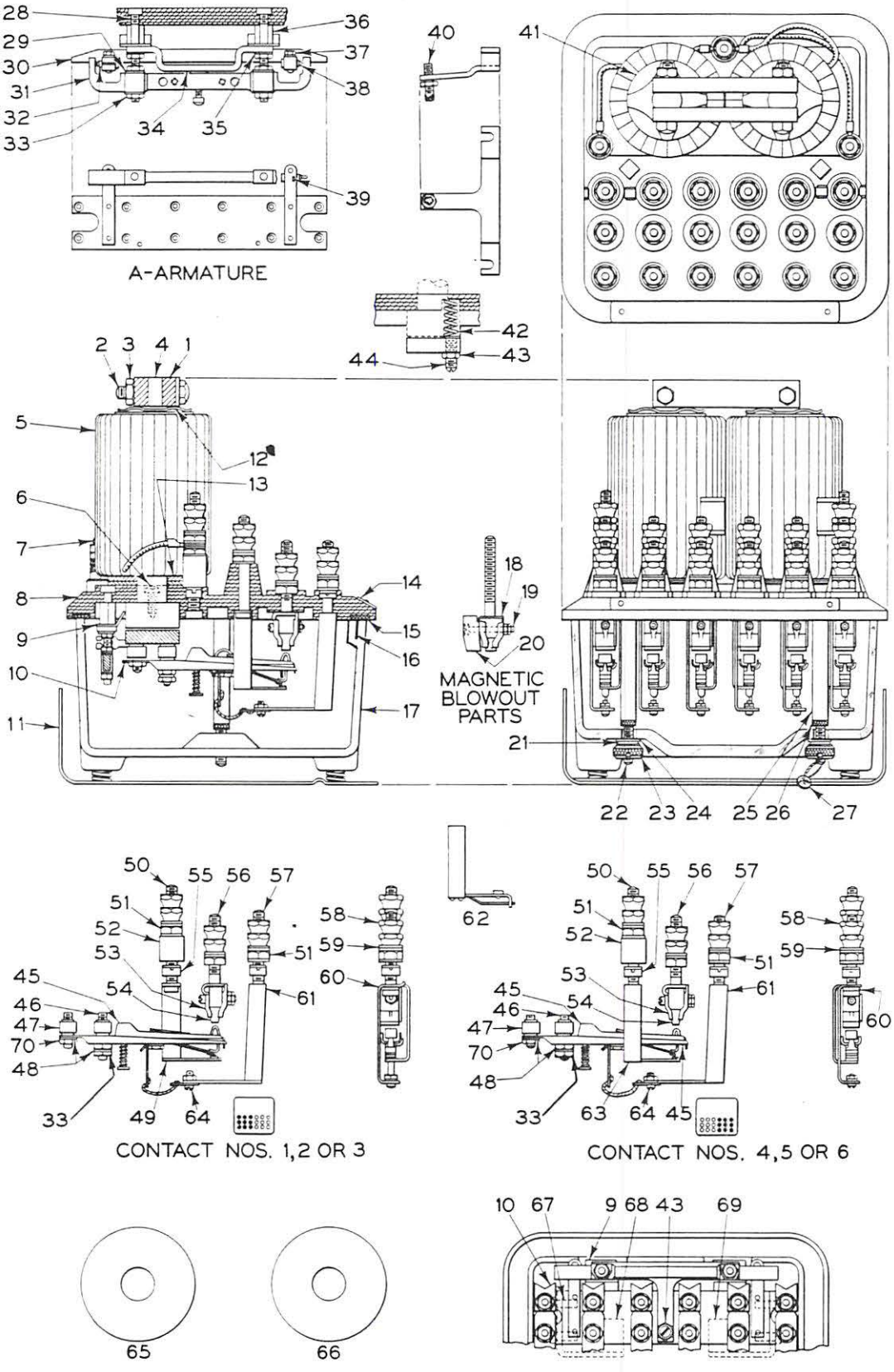
TYPE K, SIZE 4 FLASHER RELAY

Parts List

For parts not listed here, see page 22.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
48	SCREW, set, for locking screw Ref. 39	P65-140
49	TRUNNION, for bracket	P65-462
50	BEARING, Complete	P65-769
51	NUT, for screw Ref. 52	P62-223
52	SCREW, stop for armature	P65-205
53	SUPPORT, left-hand, includes contacts and stop screws	P65-750
54	CONTACT, for supports	P65-258
55	SUPPORT, right-hand, includes contacts and stop screws	P65-749
56	SCREW, for supports Refs. 53 and 55	P65-779
56A	NUT, for above	P65-755
57	TRUNNION	P65-460
58	RESISTOR, 10 ohms	P65-957



Type K, Size 6 relays.

Type K, Size 6 Relays

Common Parts List

This list covers repair parts for all Type K, Size 6 neutral relays except special parts for the following:

Biased-neutral	see page 50
Power-transfer	see page 50
Retained-neutral	see page 54

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
*A	ARMATURE COMPLETE, for all Size 6 relays except power-transfer, biased-neutral, retained-neutral, and quick-crossover relays	P65-526
*A1	As above, except for quick-crossover relays	P65-531
1	YOKE, for cores, two required	P65-579
2	SCREW, for fastening yokes to cores	P50-128
3	NUT, for screw Ref. 2	P85-205
4	CORE, for coils, for all Size 6 relays except biased-neutral and quick-crossover	P65-335
4A	As above, except for quick-crossover relays	P65-344
5	COIL, see page 7 to 9, for ordering information	
6	SCREW, for fastening cores to cover	P62-214
7	SCREW, used as terminal post for coil connectors	P65-100
8	COVER, for all Size 6 relays except power-transfer, retained-neutral, and quick-crossover relays	P65-323
8A	As above, except for quick-crossover relays	P65-326
9	PLATE, connector, two required	P65-286
10	PLATE, relief gap, six required	P65-284
11	BRACKET, for wall - or shelf-mounting	P65-294
12	WASHER, spring, for top of coils	P65-485
13	WASHER, felt, for use under coils	P65-187
14	NAME PLATE, for all Size 6 relays except retained-neutral	P65-124
14A	SCREW, for above	P62-419
15	GASKET, rubber, for case	P65-247
16	TEST DATA FORM	P65-659
17	CASE, polycarbonate, for relay	P65-491

* Give catalog or drawing number of relay

Type K, Size 6 Relays

Common Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
18	HOLDER, front, for EHD contacts	P65-721
19	SCREW, for magnets and holders	P65-762
19A	NUT, for above	P65-619
20	MAGNET, for EHD contacts	P65-803
21	WASHER, for nut Ref. 23	P50-157
22	SCREW, for fastening case to relay	P65-614
23	NUT, knurled, for screw Ref. 22	P65-163
23A	SPRING, for above	P65-162
24	WASHER, rubber, for use next to case, requires washer Ref. 21	P65-182
25	BUSHING, insulating, for screw Ref. 22	P65-465
26	NUT, knurled, for screw Ref. 22	P65-463
27	SEAL, for case	P62-299
28	SCREW, for fastening armature bracket to cover	P65-107
29	WASHER, lock, for nuts on screw Ref. 28	P62-170
*30	ARMATURE COMPLETE, includes brackets for hinging riveted in place,for Size 6 relays except power-transfer, biased-neutral, retained-neutral, and quick crossover	P65-368
*30A	As above, except for power-transfer relay	P65-370
*30B	Same as Ref. 30, except for retained-neutral relay	P65-369
30C	Same as Ref. 30, except for biased-neutral relay	P65-371
30D	Same as Ref. 30, except for quick-crossover relay	P65-372
31	BRACKET, for supporting armature	P65-715
32	TRUNNION, for armature	P65-459
33	NUT, 11/32" hex., for screw Ref. 28 and screws on insulators Ref. 46	P65-150
34	STOP, armature, for relay	P65-812
35	WASHER, lock, for nut Ref. 33	P65-973
36	NUT, for screw Ref. 28	P65-151
37	SCREW, for bracket on armature	P65-381
37A	WASHER, lock, for above	P62-402
38	TRUNNION, headless, for armature	P65-458

* Give catalog or drawing number of relay

Type K, Size 6 Relays

Common Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
39	PIN, for trunnion	P65-170
40	SCREW, for armature stop	P62-150
41	WASHER, fibre, for use between spring washer and coils	P65-455
42	SPRING, for armature, for quick-crossover relays	P65-159
43	NUT, for screw Ref. 44	P62-410
44	SCREW, for adjusting armature	P65-734
45	FINGER COMPLETE, for details see page 64	
45A	As above, except for quick-crossover relays	
46	INSULATOR, long, for fastening finger to armature	P62-330
47	INSULATOR, short, for fastening finger to armature	P65-557
48	WASHER, lock, for nuts on insulators	P65-973
49	SUPPORT, back contact, right-hand, for contacts Nos. 1, 2 and 3 except close-before-open contact of secondary relay of primary-secondary combination	P65-633
49A	As above, except heavy-duty	P65-635
50	SCREW, terminal post, for back contact	P65-104
51	NUT, for terminal posts	P65-585
52	INSULATOR, for terminal posts	P65-224
53	HOLDER, back, for front contact	P65-720
53A	HOLDER, front, for front contact	P65-836
53B	SCREW, for above	P65-763
53C	NUT, for above	P65-498
54	CONTACT, front, metal-impregnated-carbon, for all relays except close-before-open contact	P65-256
54A	As above, except metal contact for close-before-open contact	P65-647
55	NUT, spanner, for terminal post	P65-588
55A	WASHER, lead, for above	P65-190
56	SCREW, used as terminal post for front contacts	P65-504
57	SCREW, terminal post for contact fingers	P65-102
58	NUT, for terminal posts	P76-131

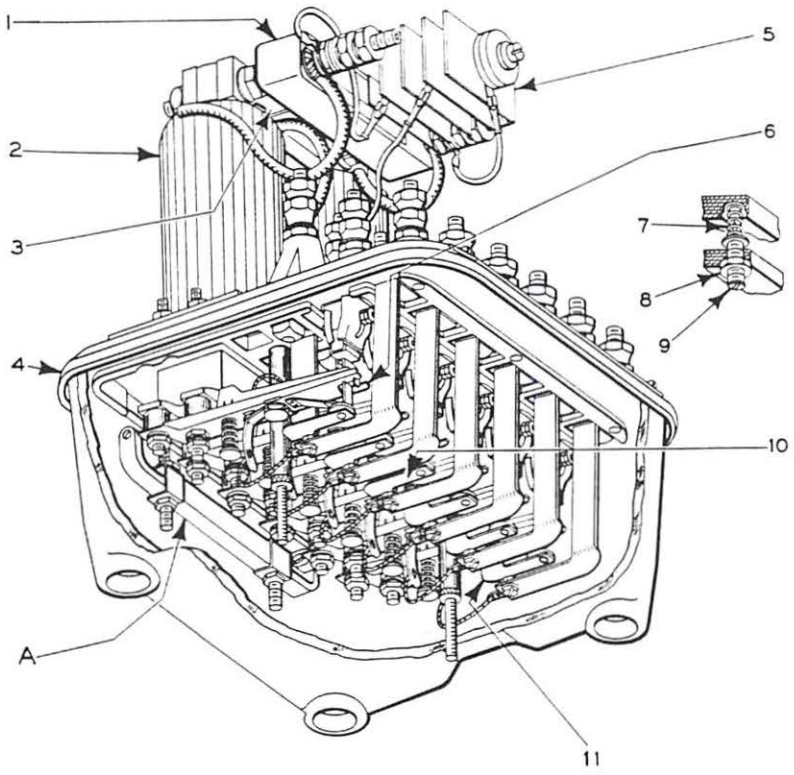
Type K, Size 6 Relays

Common Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
59	WASHER, for terminal posts	P76-108
60	WASHER, lock, for terminal posts	P65-179
61	TERMINAL, for contact fingers	P65-674
62	SUPPORT, back contact, left-hand, has metal contact, for close-before-open contact	P65-638
63	SUPPORT, back contact, left-hand, has metal contact, for contact Nos. 4, 5 and 6, except close-before-open contact of secondary relay of primary-secondary combination	P65-634
63A	As above, except heavy-duty	P65-636
64	SCREW, for terminal	P65-212
64A	NUT, for above	P65-211
64B	WASHER, lock, for above	P62-406
65	WASHER, copper, for slow-release relays	P65-172
66	WASHER, fibre, for slow-release relays	P65-145
67	SCREW, for poles Refs. 68 and 69	P65-242
67A	WASHER, for above	P76-247
68	POLE SHOE, left hand, for slow-pickup and quick-crossover relays	P65-761
69	POLE SHOE, right hand, for slow-pickup and quick-crossover relays	P65-760
70	NUT, 3/8" hex., for screws on insulator Ref. 97	P76-129

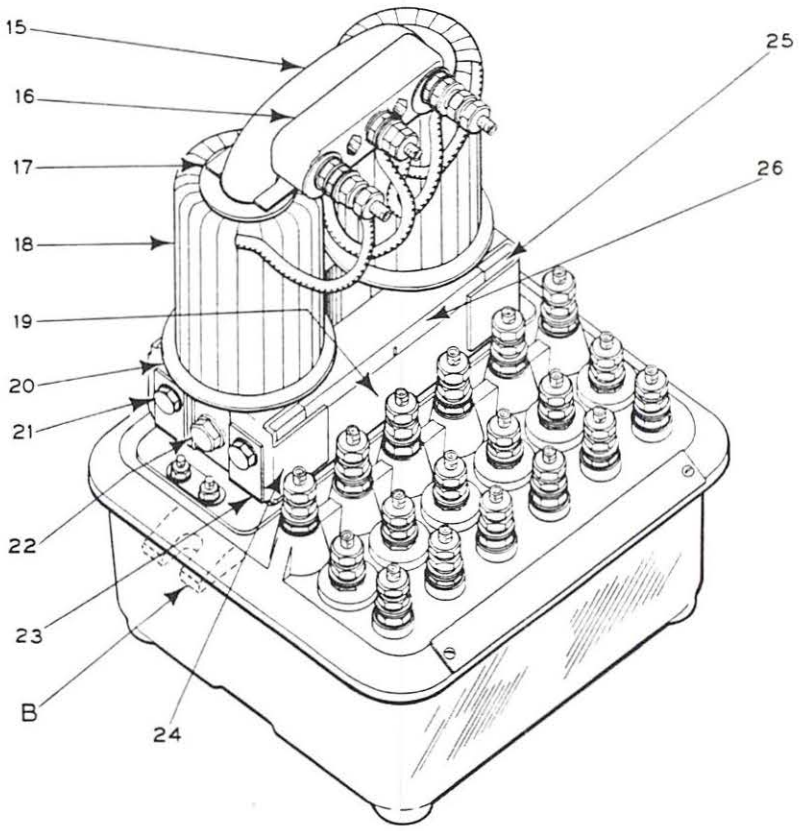
Memoranda



TYPE K, SIZE 6
POWER-TRANSFER RELAY

FOR PARTS NOT SHOWN HERE,
SEE PAGE 44.

TYPE K, SIZE 6
BIASED-NEUTRAL RELAY



Type K, Size 6 power-transfer and biased-neutral relays.

Type K, Size 6 Power-Transfer and Biased-Neutral Relays

Parts List

For parts not shown here, see page 44.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	ARMATURE COMPLETE, for power-transfer relay. For references see page 46	P65-528
B	ARMATURE COMPLETE, for biased-neutral relay. For references see page 46	P65-529
1	TERMINAL BLOCK, only, for relay	P65-221
2	COIL, right or left, 50 ohms.	P65-402
3	SUPPORT, for terminal block	P65-716
4	COVER, for power-transfer relay	P65-326
5	RECTIFIER, Type S 1/4, selenium.	A53-541
6	FINGER COMPLETE, heavy-duty front and back, for references see page 64	
7	SPRING, for armature	P65-154
8	NUT, for screw Ref. 9	P62-410
9	SCREW, for adjusting power-transfer relay	P65-734
10	SUPPORT, back, right hand, for power-transfer relay, used in spaces 1, 2 and 3	P65-635
11	SUPPORT, back, left hand, for power-transfer relay, used in spaces 4, 5 and 6	P65-636
15	CORE, for relay	P65-340
15A	CORE HEAD, for relay	P65-846
16	TERMINAL BLOCK COMPLETE, with three posts, for biased-neutral relay	P65-599
16A	As above, except with four posts	P65-602
17	SPRING, for top of coils	P65-276
18	COIL, right or left, 1.0 ohms	P65-397
18B	Same as Ref. 18 except 250 ohms	P65-403
18C	Same as Ref. 18 except 500 ohms	P65-404
18D	Same as Ref. 18 except 33 ohms	P65-392
*19	MAGNET, for biased-neutral relay	P65-684
20	WASHER, fibre, for use under coils	P65-145
21	SCREW, for clamp	P65-267
21A	WASHER, lock, for above	P73-308

*Give catalog or drawing number of relay.

Type K, Size 6 Power-Transfer and Biased-Neutral Relays

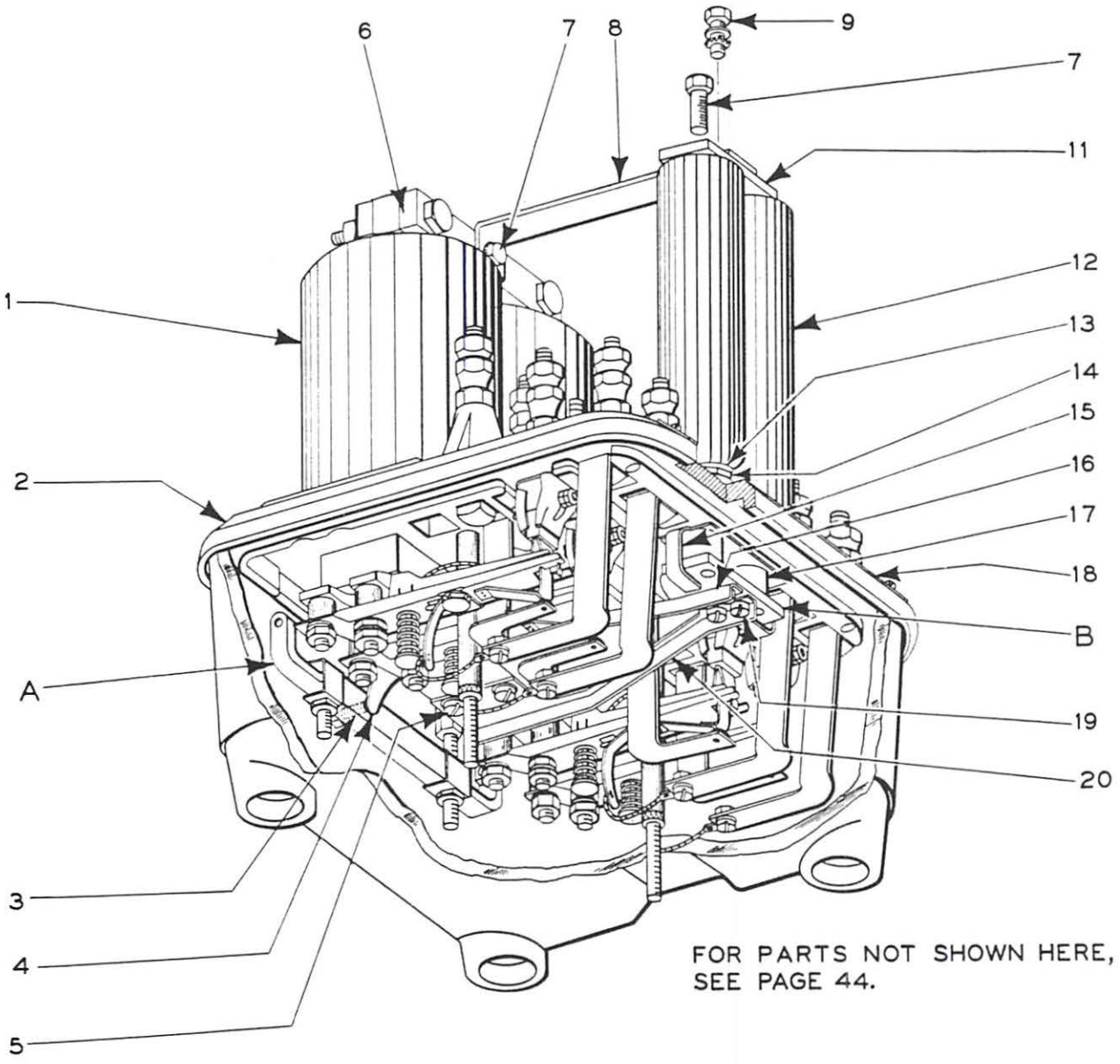
Parts List

For parts not shown here, see page 44.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
22	SCREW, for fastening cores to bracket	P65-210
22A	WASHER, lock, for above	P65-729
23	PLATE, reinforcement for top of relay	P65-515
24	CLAMP, for magnets	P65-820
25	BRACKET, for biased-neutral relay	P65-821
26	STRIP, leakage, for biased-neutral relay	P65-822

Memoranda



Type K, Size 6 retained-neutral relay.

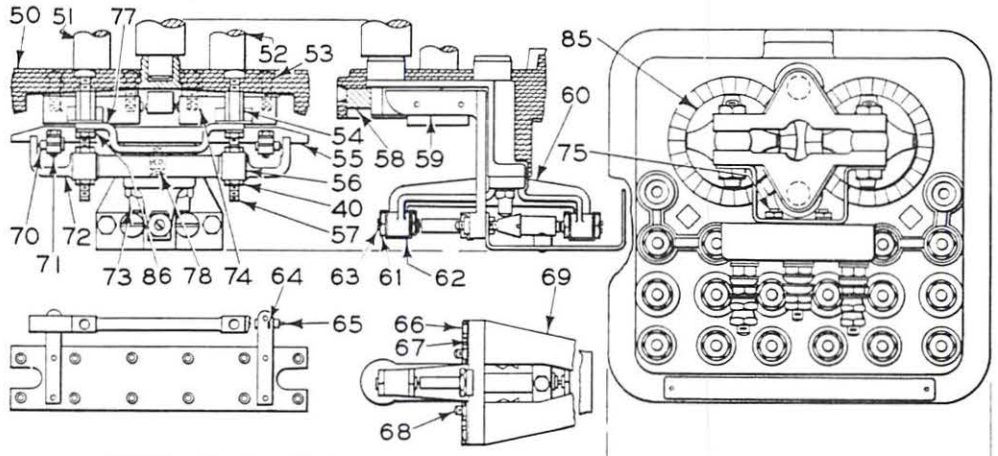
Type K, Size 6 Retained-Neutral Relay

Parts List

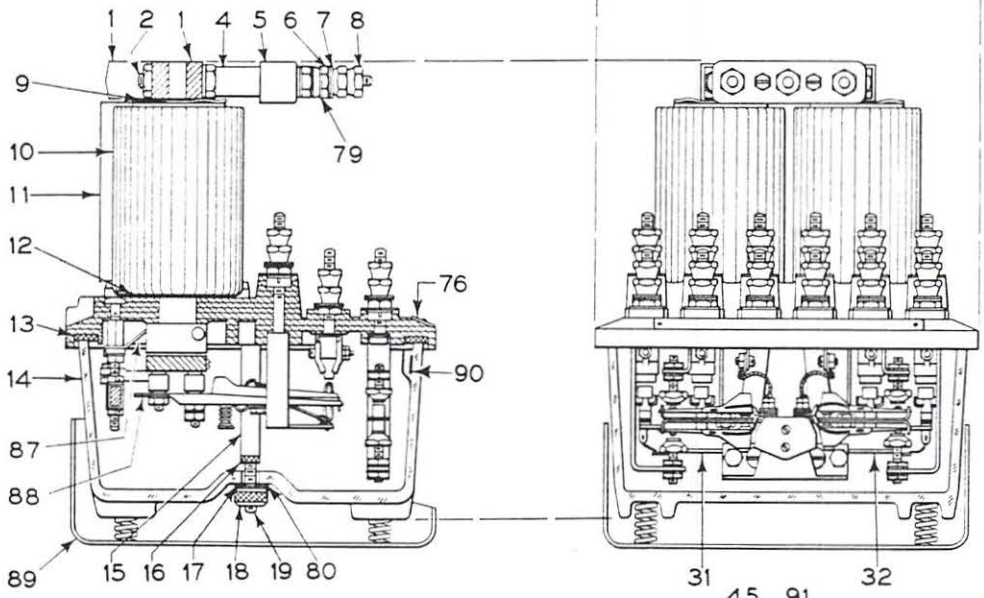
For parts not listed here, see page 44.

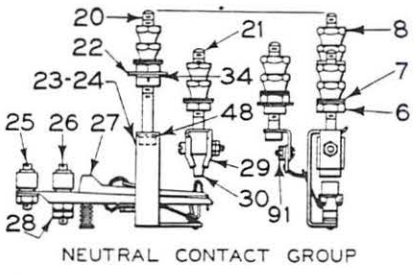
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	ARMATURE COMPLETE, neutral, for references, see page 44	P65-530
B	ARMATURE COMPLETE, retained-neutral	P65-376
1	COIL, right or left, 160 ohms	P65-429
2	COVER, for relay	P65-329
3	SCREW, headless, for spring Ref. 4	P65-291
4	SPRING, for armature	P65-275
5	SCREW, for fastening retaining armature to neutral armature	P65-739
5A	WASHER, lock, for above	P65-973
6	YOKE, drilled for screw Ref. 7	P65-582
7	SCREW, for fastening bracket Ref. 8 to yoke, also for fastening retaining yoke to front cover	P65-241
7A	WASHER, lock, for above	P65-732
8	BRACKET, reinforcement between coils	P65-618
9	SCREW, for fastening bracket to retaining yoke	P65-240
9A	WASHER, lock, for above	P65-732
9B	WASHER, for above	P62-196
11	YOKE, for coils Ref. 12	P65-583
12	COIL, right or left, 0.35 ohms	P65-444
13	NUT, for cores	P62-204
14	WASHER, felt, for use under coils Ref. 12	P65-292
15	STOP, back, for retaining armature	P65-758
16	SUPPORT, left-hand, for armature	P65-360
17	CORE, for coils Ref. 12	P65-339
18	NAME PLATE	P65-126
18A	SCREW, for above	P62-419
19	SCREW, for fastening supports to armature	P65-502
20	SUPPORT, right-hand, for armature	P65-361

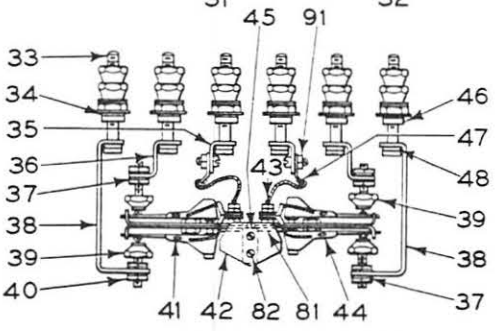


VIEWS OF ARMATURE MOUNTING AND POLARIZED STRUCTURE

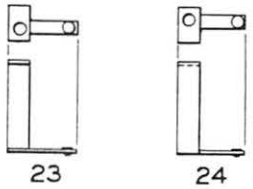


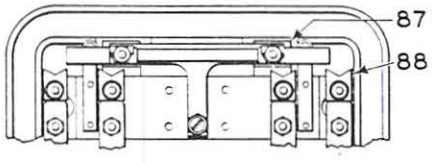


NEUTRAL CONTACT GROUP



POLARIZED CONTACT GROUP





Type K, Size 6 polarized relay.

Type K, Size 6 Polarized Relay

Parts List

Note: This list covers repair parts for all polar relays except special parts for the following:

Size 6, Retained - Neutral Polarized, see page 62

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	YOKE, for permanent magnet	P65-974
2	SCREW, for fastening yokes to cores	P50-128
2A	NUT, for above	P85-205
4	SUPPORT, for terminal block	P65-717
5	TERMINAL BLOCK COMPLETE, includes three terminal posts	P65-598
6	NUT, for terminal posts	P65-585
7	WASHER, for terminal posts	P76-108
8	NUT, for terminal posts	P76-131
9	WASHER, spring, for top of coils	P65-485
10	COIL, right or left, 2.0 ohms	P65-398
10A	COIL, right or left, 250 ohms	P65-403
*11	MAGNET, permanent, for relays (must be ordered in pairs)	P65-680
12	WASHER, felt, for use under coils	P65-187
13	GASKET, rubber, for case	P65-247
14	CASE, polycarbonate for housing relay contacts	P65-491
15	BUSHING, insulating, for screw Ref. 19	P65-465
16	NUT, knurled, for screw Ref. 19	P65-463
17	WASHER, rubber, for use next to case, requires washer Ref. 80	P65-182
18	NUT, knurled, for screw Ref. 19	P65-163
18A	SPRING, for above	P65-162
19	SCREW, for fastening case to cover	P65-614
20	TERMINAL POST, for contact group	P65-104
21	TERMINAL POST, for front contacts	P65-504
22	WASHER, for terminal posts	P85-50

* Give catalog or drawing number of relays

Type K, Size 6 Polarized Relay

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
23	BACK SUPPORT COMPLETE, right hand, has metal contact	P65-633
24	BACK SUPPORT COMPLETE, left hand, has metal contact	P65-634
25	INSULATOR COMPLETE, includes short screw, for fastening finger to neutral armature	P65-557
26	INSULATOR COMPLETE, includes long screw, for fastening finger to neutral armature	P62-330
27	FINGER COMPLETE, has metal front and back contacts, for references see page 64	
28	NUT, for screws on insulators	P65-150
28A	WASHER, lock, for above	P65-973
29	HOLDER, back, for front contact	P65-720
29A	HOLDER, front, for front contact	P65-836
29B	SCREW, for above	P65-763
29C	NUT, for above	P65-498
30	FRONT CONTACT, metal-impregnated carbon	P65-256
31	TERMINAL, for neutral finger	P65-669
32	TERMINAL, for neutral finger	P65-670
33	SCREW, for polarized contact	P65-102
34	WASHER, lead, for terminal posts	P65-192
35	TERMINAL, for connector Ref. 47	P65-675
36	SUPPORT, for contact Ref. 39	P65-475
37	WASHER, lock, for nut Ref. 40	P65-973
38	SUPPORT, for contact Ref. 39	P65-476
39	CONTACT COMPLETE, metal-impregnated carbon, for polarized contacts. Four required	P65-561
40	NUT, for contact Ref. 39, also for screw Ref. 57	P65-150
41	FINGER COMPLETE, right hand, has metal contacts, for polarized contact group, for reference see page 64	
42	BLOCK, for holding fingers	P65-605
43	SCREW, for fastening fingers to block Fig. 42	P65-763
43A	NUT, for above	P65-498
43B	WASHER, lock, for above	P62-696

Type K, Size 6 Polarized Relay

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
44	FINGER COMPLETE, left hand, has metal contacts, for polarized contact group, for references see page 64	
45	WASHER, lock for screw 43	P65-299
46	NUT, spanner, for terminal posts	P65-589
47	CONNECTOR COMPLETE, for polarized contact group	P65-538
48	WASHER, lock, for terminal posts	P65-179
50	COVER AND POLE, for relays	P65-313
51	CORE COMPLETE, with residual pins	P65-349
52	CORE COMPLETE, with residual pins	P65-350
53	SCREW, for fastening cores to cover	P62-215
54	NUT, for screw Ref. 57	P65-151
55	NEUTRAL ARMATURE COMPLETE. Includes brackets for trunnions riveted in place	P65-368
56	WASHER, lock, for nut Ref. 40	P62-170
57	SCREW, for fastening armature to cover	P65-107
58	BLOCK, filler, for cover	P65-595
59	POLARIZED ARMATURE COMPLETE, for relay	P65-509
60	BEARING, for armature	P65-727
61	NUT, for trunnion	P65-585
62	WASHER, lock, for nut Ref. 61	P65-194
63	TRUNNION, for polarized armature	P65-385
64	PIN, for trunnion Ref. 65	P65-170
65	TRUNNION, headless, for armature	P65-458
66	SCREW, for fastening arm Ref. 69 to polarized structure	P65-295
66A	NUT, for above	P65-150
67	WASHER, lock, for nut on screw Ref. 66	P65-298
68	SCREW, for fastening arm to polarized structure	P65-114
68A	NUT, for above	P65-150
69	ARM COMPLETE, for supporting block Ref. 42	P65-792
70	TRUNNION, for armature	P65-459
71	SCREW, for bracket on armature	P65-381

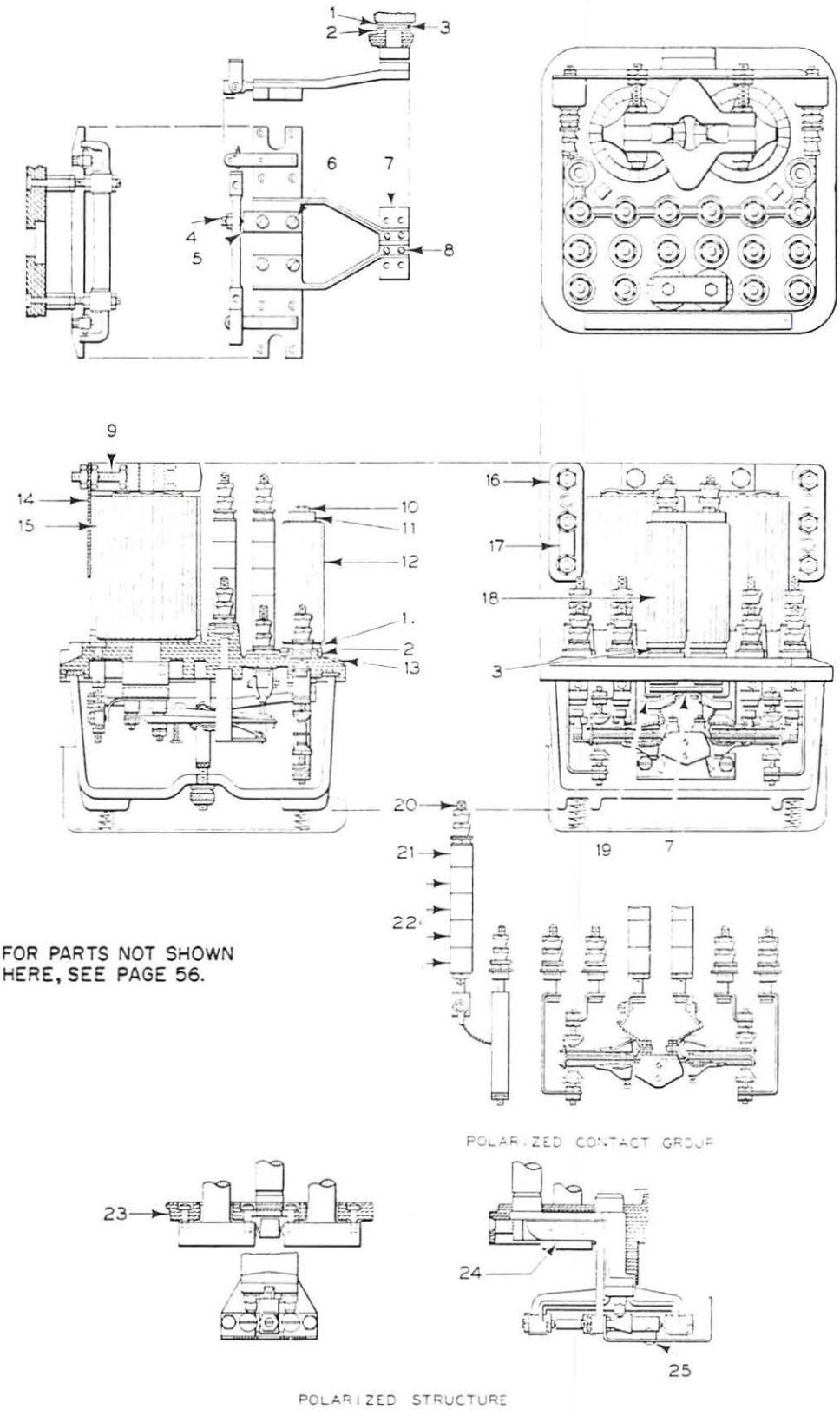
Type K, Size 6 Polarized Relay

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
71A	WASHER, lock, for above	P62-403
72	BRACKET, for supporting armature	P65-715
73	SCREW, for fastening bearing Ref. 60 to pole	P65-113
73A	WASHER, lock, for above	P65-973
74	PIN, for fastening cores to cover	P65-186
75	SCREW, for fastening terminal block to support Ref. 4	P65-109
75A	NUT, for above	P65-150
75B	WASHER, lock, for above	P65-973
76	NAME PLATE, for relay	P65-121
76A	SCREW, for above	P62-419
77	ARMATURE STOP COMPLETE, for relay	P65-812
78	SCREW, for stop	P62-150
79	WASHER, lock, for terminal posts	P81-206
80	WASHER, steel, for nut Ref. 18	P50-157
81	PLATE, for reinforcing fingers, Refs. 41 and 44	P65-782
82	SCREW, for fastening block Ref. 42 to arm Ref. 69	P65-763
82A	NUT, for above	P65-498
85	WASHER, fibre, for use between spring washer Ref. 9 and coils	P65-455
86	WASHER, lock, for nut Ref. 40	P65-973
87	PLATE, connector, two required	P65-286
88	PLATE, relief gap, four required	P65-284
89	BRACKET, for wall- or shelf-mounting	P65-294
90	TEST DATA FORM	P65-662
91	SCREW, for connector	P65-212
91A	NUT, for above	P65-211
91B	WASHER, lock, for above	P62-406

Memoranda



Type K, Size 6 retained-neutral polarized relay.

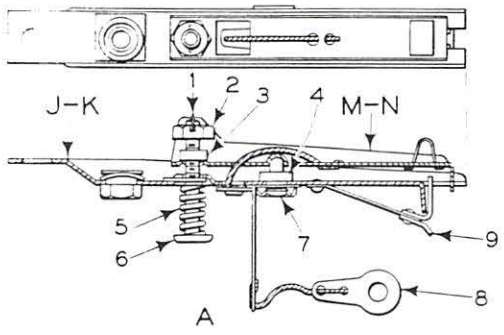
Type K, Size 6 Retained-Neutral Polarized Relay

Parts List

For parts not listed here, see page 56

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	WASHER, felt, use under coil Ref. 12	P65-292
2	WASHER, for use between nut and cover	P65-174
3	NUT, fastening core Ref. 18 to cover	P62-204
4	SCREW, headless, for spring Ref. 5	P65-291
5	SPRING, for armature	P65-275
6	SCREW, for fastening retaining armature to neutral armature	P65-739
6A	WASHER, lock, for above	P65-973
7	ARMATURE COMPLETE, retaining	P65-375
8	SCREW, for fastening retaining armature to supports	P65-502
9	SCREW, for fastening yokes to cores	P65-848
10	SCREW, for fastening yoke Ref. 11 to cores	P65-241
11	YOKE, for cores Ref. 18	P65-573
12	COIL, retaining, right or left, 0.231 ohms	P65-427
13	NAME PLATE	P65-120
13A	SCREW, for above	P62-419
14	PLATE, for terminal blocks	P65-849
15	COIL, right or left, 160 ohms	P65-429
16	TERMINAL BLOCK COMPLETE, with three posts	P65-603
17	CONNECTOR, for terminal block	P65-217
18	CORE, for coil Ref. 12	P65-336
19	BACKSTOP, for retaining armature	P65-758
20	SCREW, for polarized contacts	P65-106
21	BUSHING, insulating, short, for post Ref. 20	P65-225
22	BUSHING, insulating, long, for post Ref. 20	P65-224
23	COVER AND POLE, for relay	P65-317
24	POLARIZED ARMATURE	P65-510
25	SCREW, for armature	P50-253
25A	WASHER, lock, for above	P65-973


J–K
M–N
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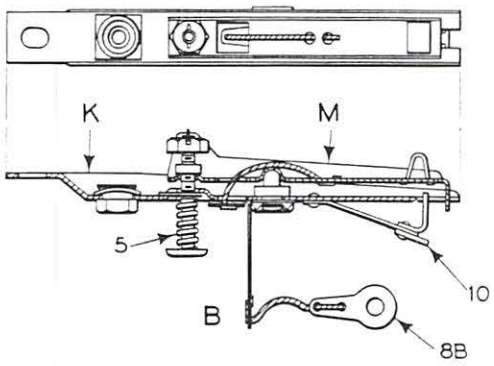
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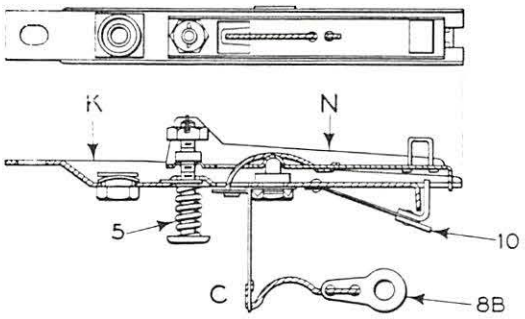
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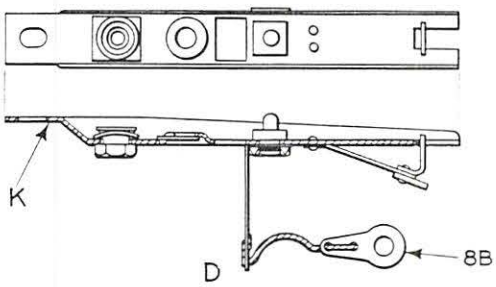
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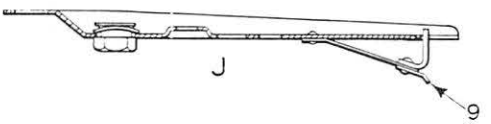
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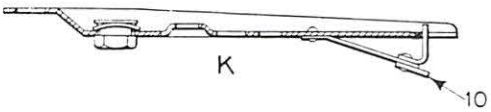
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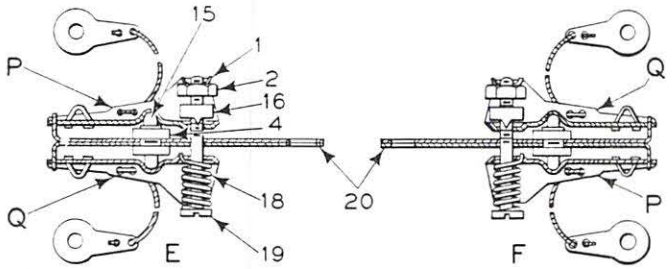
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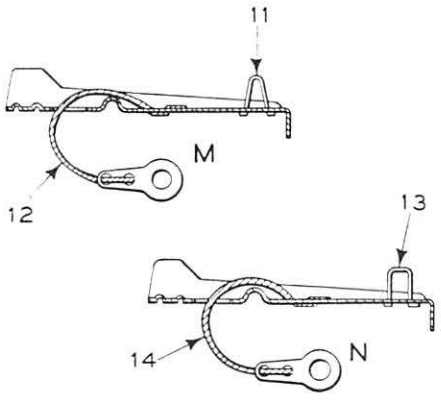
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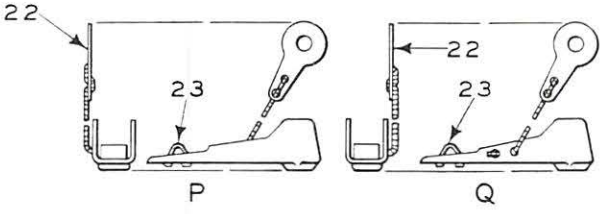
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Fingers

Fingers

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	FINGER COMPLETE, has regular metal front and back contacts, for all Type K relays with regular-duty contacts except the following: 1 - Switch - overload (See Ref. D) 2 - Biased-neutral with heavy-duty contacts (See Ref. C) 3 - Power-transfer (See Refs. B and C) 4 - Primary of primary secondary (See Ref. A1) 5 - SPU, SR. and Q.C.O. (See Ref. A2)	P65-692
A1	As above, except for use as close-before-open contact on primary of primary-secondary relay	P65-700
A2	Same as above, except for slow-pickup, slow-release and quick-crossover relay	P65-699
B	FINGER COMPLETE, has regular metal front and heavy-duty back contacts, for Type K2 Power Transfer relay.	P65-701
C	FINGER COMPLETE, has heavy-duty front and back contacts, for Types K4 and K6 Power-Transfer relays and Types K4 and K6 biased-neutral relays	P65-694
D	FINGER COMPLETE, has heavy-duty back contact only, for switch-overload relay	P65-698
E	FINGER COMPLETE, polarized, left-hand, has metal contacts, for all Size 6 polarized and retained-neutral polarized relays	P65-689
F	FINGER COMPLETE, polarized, right-hand, has metal contacts, for all Size 6 polarized and retained-neutral polarized relays	P65-690

Fingers

Parts List

Order by catalog number and name shown in bold type

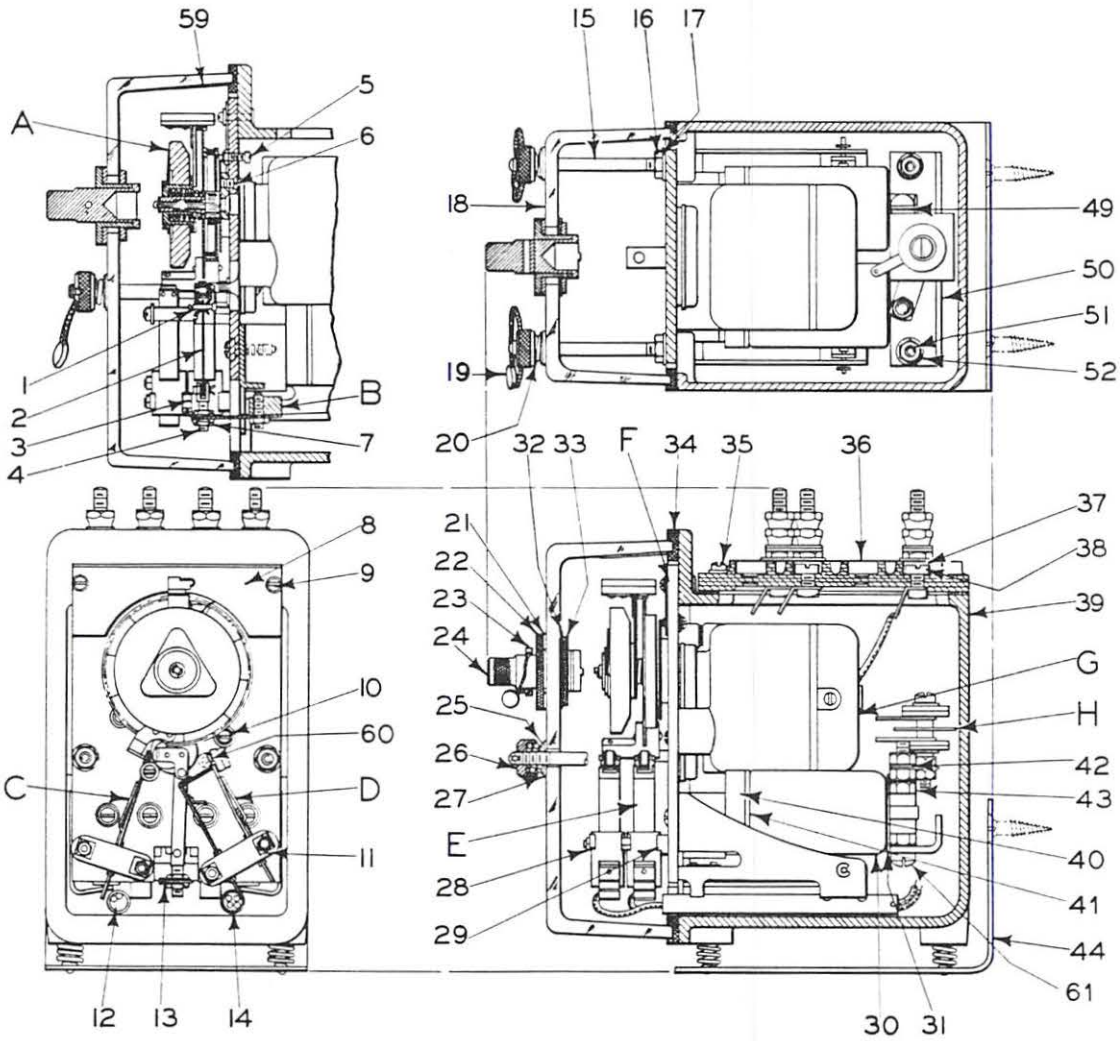
REF.	NAME	CATALOG NUMBER
J	FINGER, lower, with regular-back contact, includes all parts as shown	P65-702
K	FINGER, lower, with heavy-duty back contact, includes all parts as shown	P65-703
M	FINGER COMPLETE, upper, with regular front contact, includes all parts as shown, for fingers Refs. A and B	P65-706
M1	As above, except for fingers Refs. A1 and A2	P65-707
M2	Same as Ref. M, except for fingers Ref. B	P65-708
N	FINGER COMPLETE, upper, with heavy-duty front contact, includes all parts as shown. For finger Ref. C	P65-709
P	FINGER COMPLETE, upper, includes all parts as shown, for polarized fingers Refs. E and F	P65-705
Q	FINGER COMPLETE, lower, includes all parts as shown, for polarized fingers Refs. E and F	P65-704
1	PIN, for nut Ref. 2	P65-147
2	NUT, slotted, for screws Refs. 6 and 19	P65-238
3	NUT, rectangular, for screw Ref. 6	P65-268
4	NUT, for screws Refs 7 and 15	P65-383
5	SPRING, .032" dia. wire	P65-818
5A	As above, except .025" dia. wire	P65-817
6	SCREW, for fingers	P65-722
7	SCREW, pivot, for fingers	P65-847
8	CONNECTOR, 3-1/4" centers, for all regular-duty fingers	P65-543
8	Same as Ref. 8, except for heavy-duty fingers	P65-545
9	CONTACT COMPLETE, back, metal, with spring and stop, for finger Ref. J	P65-261
10	CONTACT COMPLETE, back, metal, heavy-duty, with spring and stop, for finger Ref. K	P65-262
11	CONTACT, only, metal, for fingers Refs. M, M1 and M2	P65-607
12	CONNECTOR COMPLETE, for regular-duty fingers Ref. M	P65-541

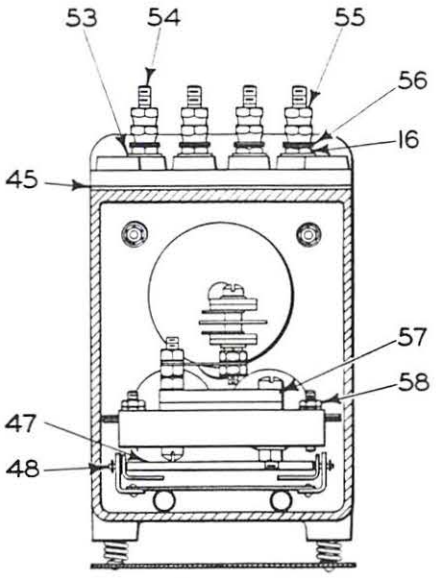
Fingers

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
13	CONTACT, only, metal, heavy-duty, for finger Ref. N	P65-611
14	CONNECTOR COMPLETE, for heavy-duty fingers	P65-542
15	SCREW, pivot, for fingers	P65-216
16	NUT, for screw Ref. 19	P65-780
18	SPRING, for polarized fingers	P65-152
19	SCREW, for spring on polarized fingers	P65-723
20	FINGER, includes upper and lower parts welded together, for fingers Refs. E and F	P65-626
22	CONNECTOR COMPLETE, for polarized fingers Refs. P and Q . . .	P65-540
23	CONTACT, only, metal, for polarized fingers Refs. P and Q	P65-608





Type KB, motor-operated timing relay.

Type KB, Motor-Operated Timing Relay

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	TIMER COMPLETE, for references see page 72	
B	ARMATURE COMPLETE, for references see page 72	
C	CONTACT GROUP, for references see page 72	
D	CONTACT GROUP, for references see page 72	
E	CONTACT GROUP, for references see page 72	
F	PLATE COMPLETE, for references see page 72	
G	MOTOR COMPLETE, with gear train, for 8 volt operation, timing 4 to 64 seconds	P62-585
G1	As above, except timing 1 to 8 minutes	P62-584
G2	Same as Ref. G, except for 10 volt operation	P62-587
G3	Same as Ref. G1 except for 10 volt operation	P62-586
G4	Same as Ref. G, except for 12 volt operation	P62-590
G5	Same as Ref. G1, except for 12 volt operation	P62-589
H	RECTIFIER, Type S 1/4, selenium	A53-539
1	PIN, for link	P62-314
1A	WASHER, split, for above	P62-291
1B	WASHER, for above	P62-138
2	LINK, for armature	P62-304
3	NUT, for stud Ref. 23 shown on page 72	P62-187
4	STUD, for armature	P62-648
5	SCREW	P62-701
5A	NUT, for above	P62-183
6	SCREW, for mounting timer	P62-702
7	NUT, for stud Ref. 4	P65-150
8	NAME PLATE, for relay with one check contact	P65-132
8A	NAME PLATE, for relay with two check contacts	P65-829
9	SCREW, for mounting plate Ref. F	P73-137
9A	WASHER, lock, for above	P62-402
10	SCREW	P62-188
10A	WASHER, lock, for above	P62-406
11	WASHER, lock, bent up, for nut on contact group	P62-172

Type KB, Motor-Operated Timing Relay

Parts List

Order by catalog number and name shown in bold type

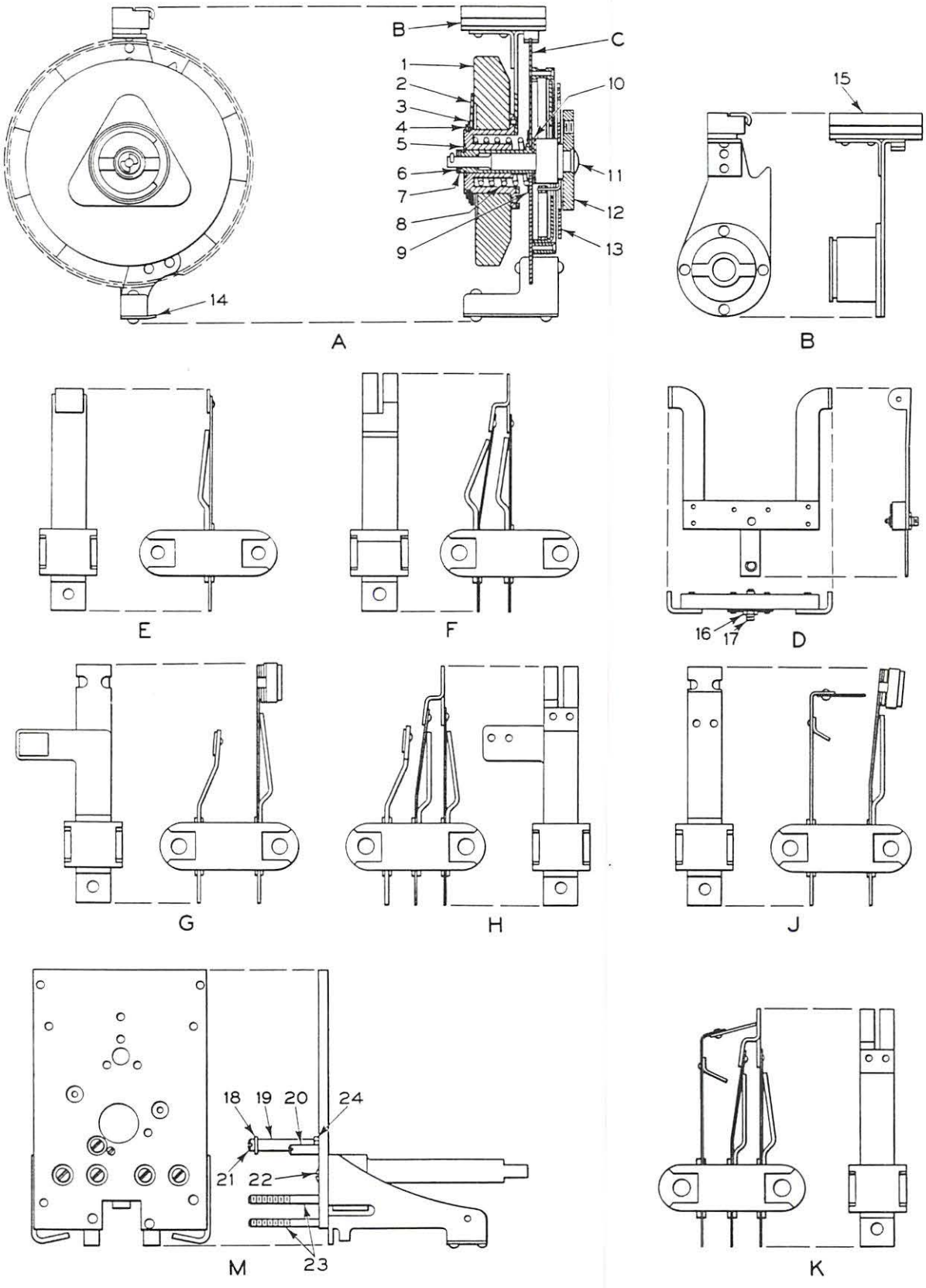
REF.	NAME	CATALOG NUMBER
12	LEAD COMPLETE, left-hand,for relays with one check contact . . .	P65-219
12A	LEAD COMPLETE, left-hand,for relays with two check contacts . .	P65-831
13	WASHER, lock, for nut Ref. 7	P62-171
14	LEAD COMPLETE, right-hand,for relays with one check contact . .	P65-218
14A	LEAD COMPLETE, right-hand,for relays with two check contacts .	P65-830
15	STUD, for holding cover to case	P65-621
16	NUT, for stud Ref. 15 and terminal posts	P65-585
17	WASHER, for nut Ref. 16	P81-206
18	GLASS COVER, for relay	P65-497
19	CAR SEAL, for relay	P62-299
20	SPRING, for nut	P65-162
21	WASHER, 1/16" thick, for use between bushing Ref. 22 and glass cover	P65-183
22	BUSHING, for adjusting knob	P65-228
23	PIN, sealing, for relay	P62-121
24	KNOB, adjusting, for relay	P65-850
25	WASHER, steel, for spring Ref. 20	P50-157
26	NUT, knurled, for fastening glass cover to relay	P65-163
27	WASHER, rubber, for use between steel washer and glass cover . .	P65-182
28	NUT, for studs supporting contact	P65-304
29	SPACER, for use between contact Ref. E and Plate Ref. F	P62-351
30	COIL, 200 ohms resistance, for relay	P62-284
31	WASHER, fibre, insulation between coil and yoke	P62-293
32	WASHER, 1/64" thick, for use between nut Ref. 33 and glass cover .	P65-181
33	NUT, knurled, for bushing Ref. 22	P65-165
34	GASKET, for glass cover	P65-252
35	SCREW, for mounting cover	P76-114
35A	WASHER, lock, for above	P65-973
36	COVER, bakelite, for relay	P65-321
37	WASHER, lead, for terminal posts	P65-192
38	NUT, spanner, for terminal posts	P65-589

Type KB, Motor-Operated Timing Relay

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
39	CASE, only, for relay	P65-807
40	SLUG, for relay	P62-429
41	WASHER, felt, for coil and slug	P62-169
42	WASHER, lock, for nut Ref. 43	P81-206
43	NUT, for stud on rectifier	P62-167
44	BRACKET COMPLETE, for wall or shelf mounting	P65-568
45	GASKET, for cover	P65-251
47	TUBE, for pin Ref. 48	P62-269
48	PIN, hinge for armature	P62-125
48A	WASHER, split, for above	P62-291
49	SCREW, for yoke	P62-446
50	BRACE, for mounting rectifier	P62-703
51	INSULATOR, for relay	P62-330
52	WASHER, for insulator Ref. 51	P62-196
53	WASHER, for terminal posts	P85-50
54	SCREW, used as terminal post	P65-102
55	NUT, for terminal posts	P76-131
56	WASHER, for terminal posts	P76-108
57	YOKE, for relay	P65-577
58	NUT, for screws on insulators	P76-129
59	TEST DATA FORM.	P65-663
60	BUSHING, for relays with two check contacts	P65-868
60A	SCREW, for above	P65-867
60B	WASHER, lock, for above	P62-406
61	SCREW, for mounting rectifier	P65-967



Type KB, timing relay, detail parts.

Type KB, Timing Relay-Detail Parts

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	TIMER COMPLETE, for relays with one check contact	P62-644
A1	As above, except for relays with two check contacts	P62-645
B	ADJUSTER COMPLETE, for relays with one check contact	P62-646
B1	As above, except for relays with two check contacts	P62-647
C	GEAR COMPLETE, for timer, includes gear, hub, contact, ring, cup all riveted together, for relays with one check contact	P62-649
C1	As above, except for relays with two check contacts	P62-707
D	ARMATURE COMPLETE	P62-638
E	CONTACT COMPLETE, check, for relays with one check contact	P62-627
F	CONTACT COMPLETE, check, for relays with two check contacts.	P62-630
G	CONTACT COMPLETE, rear, timing, for relays with one check contact	P62-631
H	CONTACT COMPLETE, rear, timing, for relays with two check contacts	P62-634
J	CONTACT COMPLETE, front, timing, for relays with one check contact	P62-632
K	CONTACT COMPLETE, front, timing for relays with two check contacts.	P62-633
M	PLATE COMPLETE, with cores and bracket	P65-808
M1	As above, except without cores.	P65-968
1	FLYWHEEL, for timer	P62-637
2	WASHER, spring, for flywheel	P62-303
3	WASHER, flat, for ring Ref. 4	P62-258
4	RING, for hub	P62-202
5	WASHER, for hub	P62-140
6	WASHER, shim .005" thick, for end of shaft	P62-161
6A	As above, except .010" thick	P62-162
7	WASHER, for use behind shim Ref. 6	P62-345
8	SPRING, for timer.	P62-134
9	WASHER, for gear	P62-197
10	WASHER, for gear	P62-185
11	SHAFT, for timer	P62-344

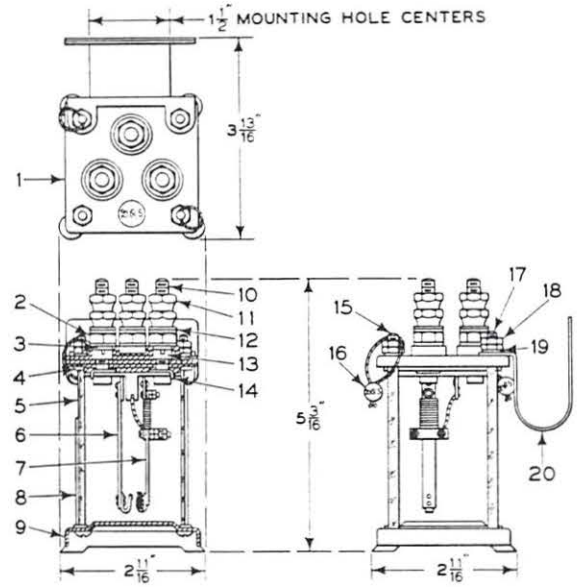
Type KB, Timing Relay-Detail Parts

Parts List

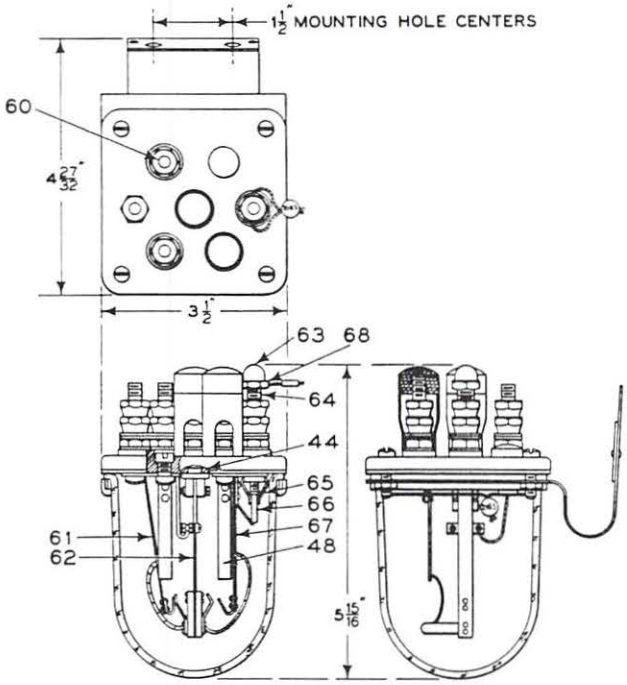
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
12	WASHER, for mounting timer	P62-639
13	DISC, for timer	P62-294
14	CONTACT, for gear Ref. C, for relays with one check contact	P65-610
14A	As above, except for relays with two check contacts	P65-863
14B	RIVET, short, for Ref. 14	P65-851
14C	As above, except for Ref. 14A	P65-864
14D	RIVET, long, for Ref. 14	P65-852
14E	As above, except for Ref. 14A	P65-865
15	CONTACT, for adjuster, for relays with one check contact	P65-853
15A	As above, except for relays with two check contacts (2 required)	P65-856
15B	RIVET, for above, 3 required	P65-855
15C	RIVET, for above, 2 required for relays with one check contact and 4 required for relays with two check contacts	P65-854
16	NUT, for screw Ref. 17	P76-129
17	SCREW, for armature	P62-199
18	WASHER, for screw	P62-710
19	BUSHING, for screw	P62-708
20	STUD	P62-711
21	SCREW, for bushing	P62-709
22	SCREW, for fastening cores and bracket to plate	P62-213
22A	WASHER, lock, for above	P62-401
23	STUD, for supporting contact groups	P62-145
24	NUT, for screw Ref. 21	P65-304

Memoranda

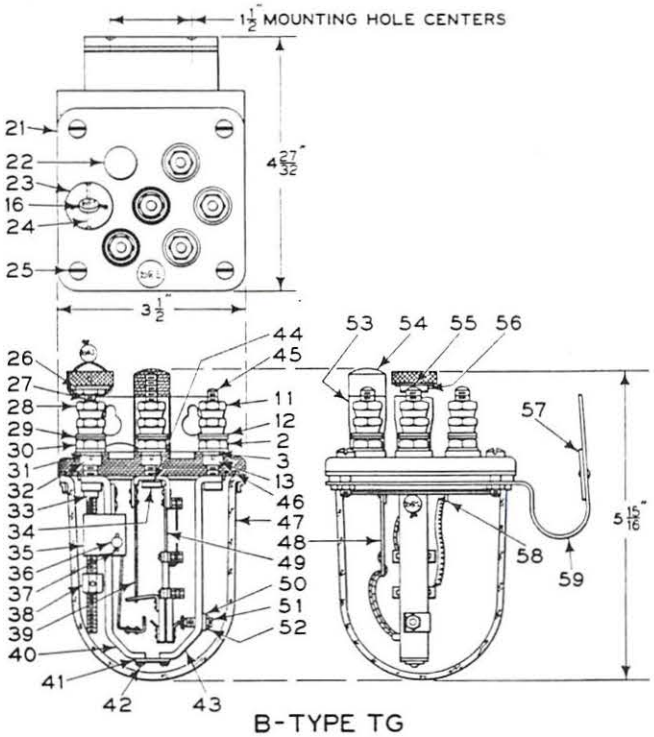


A-TYPE TA



C-TYPE TJ

FOR PARTS NOT SHOWN HERE SEE REF. B



B-TYPE TG

Timing relays, thermal-Types TA, TG and TJ.

Timing Relay, Thermal

Types TA, TG and TJ

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	COVER, for relay	P65-314
2	NUT, for terminal posts	P62-333
3	WASHER, lead, for terminal posts	P65-190
4	GASKET, for cover	P65-245
5	GLASS CASE	P65-490
6	FINGER COMPLETE, has metal contact, for 10 or 12 volt operation	P65-650
7	FINGER COMPLETE, with thermal unit, has metal contact, for 10 volt operation	P65-648
7A	As above, except for 12 volt operation	P65-649
8	NAME PLATE, for relay	P65-118
9	BASE, for relay	P65-310
10	SCREW, used as terminal post for relay	P65-613
11	NUT, for terminal posts	P76-131
12	WASHER, for terminal posts	P76-108
13	NUT, spanner, for terminal posts	P65-588
14	WASHER, lock, for terminal posts	P65-454
15	SCREW, for fastening base and glass case to cover, drilled for seal	P65-505
16	SEAL	P62-299
17	SCREW, for fastening base and glass case to cover	P65-506
18	NUT, for screws Refs. 15 and 17	P76-129
19	WASHER, for screws Refs. 15 and 17	P65-973
20	BRACKET, for wall mounting	P65-570
21	COVER, for relay	P65-319
22	PLUG, for vacant terminal post holes	P65-764
23	KNOB, for screw Ref. 33	P65-233
24	PIN, for fastening knob to screw	P65-303
25	SCREW, for fastening mounting bracket and glass case to cover	P65-234
25A	NUT, for above	P65-150
26	WASHER, for knob	P65-176
27	SCREW, bearing, for adjusting front contact	P65-753
28	NUT, 5/16", for screw Ref. 27	P65-857

Timing Relay, Thermal
Types TA, TG and TJ
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
29	WASHER, for screw Ref. 27	P65-173
30	NUT, 5/16", for screw Ref. 27	P65-604
31	WASHER, lead, for screw Ref. 27	P65-191
32	NUT, spanner, 5/16", for screw Ref. 27	P65-590
33	SCREW, adjusting, for screw Ref. 27	P65-752
34	WASHER, lock, for screw Ref. 45	P65-180
35	NUT, adjusting, for front contact	P65-384
36	PIN, for nut Ref. 35	P65-269
37	COTTER, for pin Ref. 36	P65-169
38	NUT, stop for screw Ref. 33	P65-266
38A	PIN, for above	P65-170
39	FINGER COMPLETE	P65-651
40	SUPPORT	P65-644
41	INSULATOR, for supports	P65-202
42	SCREW, for fastening insulator to supports	P65-520
42A	WASHER, lock, for above	P65-730
43	SUPPORT, for contact	P65-479
44	WASHER, shim, large	P65-593
44A	WASHER, shim, small	P65-858
45	SCREW, No. 14, terminal post for relay	P65-102
46	GASKET, for cover	P65-246
47	GLASS CASE	P65-494
48	SUPPORT COMPLETE	P65-639
49	FINGER COMPLETE, for 10 volt operation	P65-655
49A	As above, except for 12 volt operation	P65-656
50	WASHER, lock, for nut Ref. 52	P65-195
51	CONTACT COMPLETE	P65-645
52	NUT, for contact Ref. 51	P65-150
53	SHIELD, for terminal posts	P3-154
54	BUTTON, for shield	P3-127

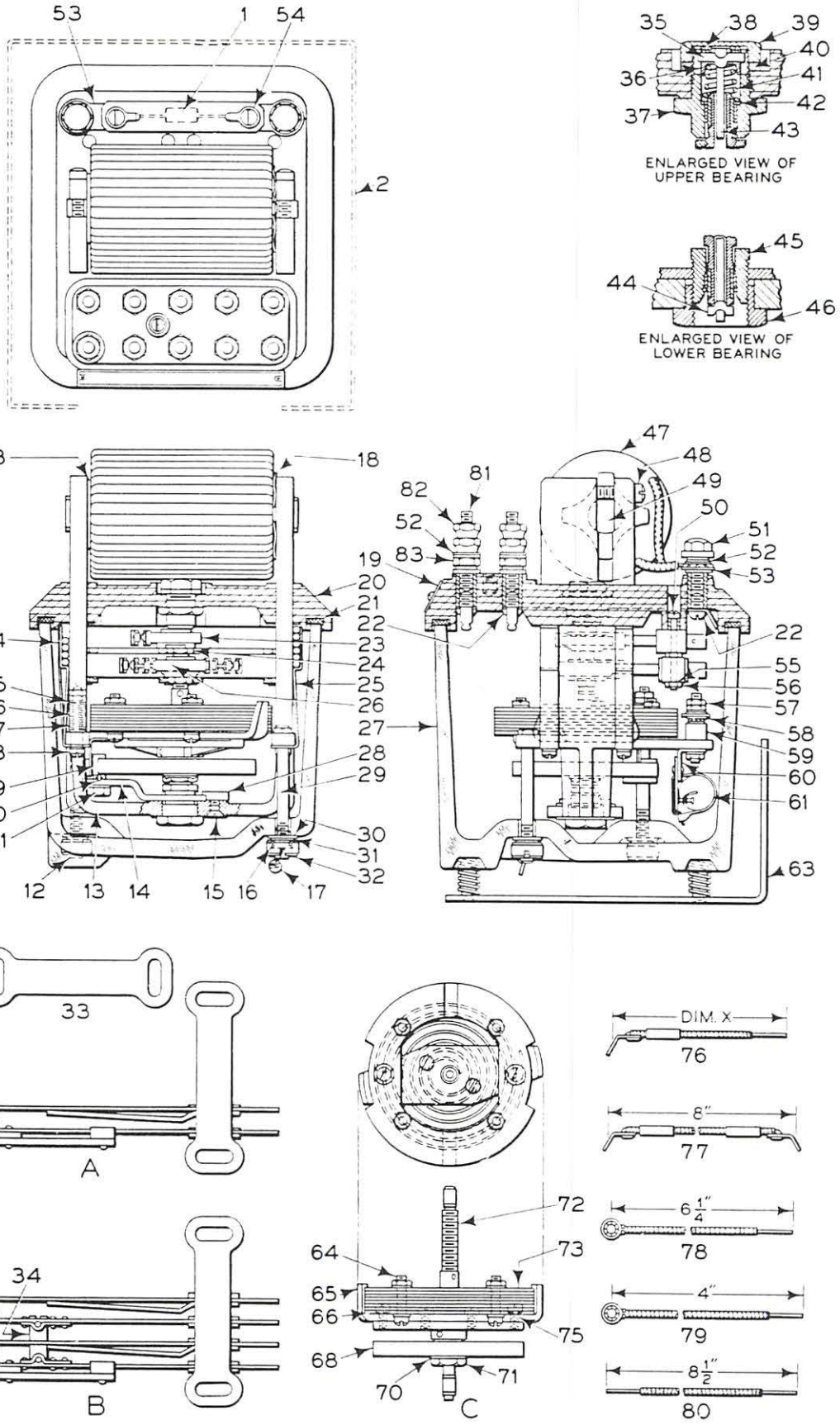
Timing Relay, Thermal

Types TA, TG and TJ

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
55	WASHER, for screw Ref. 27	P65-175
56	NUT, for screw Ref. 27	P65-587
57	NAME PLATE	P65-139
57A	PIN, for above	P62-318
58	TERMINAL, for fingers	P65-305
59	BRACKET, for mounting relay	P65-569
60	SCREW, used as terminal post	P65-504
61	FINGER COMPLETE, for 10 or 12 volt operation	P65-654
62	FINGER COMPLETE, for 10 volt operation	P65-652
62A	As above, except for 12 volt operation	P65-653
63	NUT, for sealing relay	P65-741
64	SCREW, 5/16", terminal post for relay	P65-754
65	SPRING, for post	P65-265
66	SCREW, used as terminal post	P65-622
67	FINGER COMPLETE, for 10 or 12 volt operation	P65-657
68	WASHER, for nut Ref. 63	P62-180



Type K code transmitter.

Type K Code Transmitter

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	CONTACT GROUP COMPLETE, has 1 F metal contact	P62-599
B	CONTACT GROUP COMPLETE, has two independent metal contacts	P62-600
C	ROTOR COMPLETE, for 75 rate code transmitter	P65-799
C1	As above, except for 120 rate code transmitter	P65-800
C2	Same as Ref. C, except for 180 rate code transmitter	P65-860
1	RESISTOR COMPLETE, 1000 ohms, on supporting base	P65-810
2	GUARD, for use when transmitter is wall mounted	P65-804
3	WASHER, fibre, for coil	P65-281
4	CARD, instruction.	P65-658
5	WASHER, for spring Ref. 6	P76-247
6	SPRING, for screw Ref. 12	P65-160
7	SPACER, for spring Ref. 6	P65-624
8	SCREW, for fastening support	P65-740
8A	WASHER, lock, for above	P65-973
9	STUD, for spring Ref. 68	P62-254
10	STOP, for spring Ref. 68	P62-308
11	NUT, for stud Ref. 9	P62-165
11A	WASHER, lock, for above	P81-206
12	SCREW, for locking rotor and for supporting glass case	P65-805
13	SUPPORT, for lower bearing	P65-802
14	ARM, for lower bearing	P62-422
15	SCREW, for fastening clamp to support	P62-176
16	SPRING, for holding glass case	P65-162
17	CAR SEAL	P62-299
18	WASHER, spring, for end of coil	P65-485
19	NAME PLATE	P65-130
19A	SCREW, for above	P62-419
20	COVER COMPLETE, includes poles for coil	P65-322
21	GASKET, for glass case	P65-254

Type K Code Transmitter

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
22	SCREW, for fastening leads to terminal post	P65-629
23	CAM COMPLETE, upper, ball bearing eccentric	P62-666
24	NUT, for locking cams	P62-221
25	CLIP, for holding wires	P65-290
26	CAM COMPLETE, lower, ball bearing eccentric	P62-665
27	CASE, glass, for enclosing mechanism	P65-496
28	CLAMP, for arm	P62-423
29	SCREW, headless, for supporting glass case	P65-116
29A	NUT, for above	P65-588
30	WASHER, rubber, for sealing hole in glass case	P65-182
31	WASHER, for nut Ref. 32	P50-157
32	NUT, knurled, for fastening glass case in position	P65-163
33	CONTACT GROUP, for blank spaces	P65-794
34	PUSHER, for contact group Ref. B	P62-716
35	PLATE, clamping, for top of ribbon suspension	P62-469
36	GUIDE, for spring	P62-247
37	BEARING COMPLETE, upper	P65-798
38	WASHER, shim, .005" tk.	P62-146
38A	As above, except .008" tk.	P62-147
38B	Same as Fig. 38, except .050" tk.	P62-715
39	NUT, for top bearing	P65-742
40	NUT, for top bearing	P65-468
41	SPRING, for ribbon suspension	P62-359
42	WASHER	P62-164
43	RIBBON COMPLETE	P65-296
44	PLATE, clamping, for bottom of ribbon suspension	P62-468
45	BEARING COMPLETE, lower	P62-608
46	NUT, for lower bearing	P62-316
47	COIL, 150 ohms	P65-442
48	SCREW, for clamping core in position	P62-448
49	CORE, for transmitter	P65-338

Type K Code Transmitter

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
50	SCREW, for fastening contact groups in position	P65-215
51	SCREW, for coil leads	P65-784
52	WASHER, for screw Ref. 51	P76-108
52A	WASHER, lock, for above	P85-801
53	CONNECTOR, for resistor	P65-866
54	SCREW, for fastening connector Ref. 53 to resistor	P65-200
55	WASHER, lock, for nuts Ref. 56	P62-170
56	NUT, for screw Ref. 50	P62-184
57	NUT, for insulator Ref. 59, screws Refs. 12 and 54	P76-129
58	RESISTOR, 150 ohms, arc suppression	P65-811
59	INSULATOR, for mounting resistor	P65-558
59A	WASHER, lock, for above	P62-196
60	BRACKET COMPLETE, for condenser	P65-767
61	CAPACITOR, .25 mfd.....	P65-679
63	BRACKET COMPLETE, resilient mounting for transmitter	P65-567
64	SCREW, for fastening rings to armature, for 75 rate transmitter	P62-217
64A	As above, except 1" long, for 120 and 180 rate transmitters	P62-218
64B	NUT, for above	P76-129
64C	WASHER, lock, for above	P65-973
64D	WASHER, for above	P62-195
65	ARMATURE, only	P62-625
66	RING, base, 1 required	P62-337
68	SPRING, for rotor	P62-295
70	WASHER, cup, for nut Ref. 71	P62-257
71	NUT, for rotor	P62-205
72	ROTOR, with shaft, hub and roll-pin	P65-861
72A	ROLL PIN, for above	P62-238
73	RING, weight 1/16" tk., 8 required for 75 rate transmitter	P62-336
73A	As above, except 1/32" tk., one required for 75 rate and four required for 120 rate transmitter	P62-338
75	SCREW, for fastening ring and armature to hub	P62-21c
75A	WASHER, lock, for above	P65-973

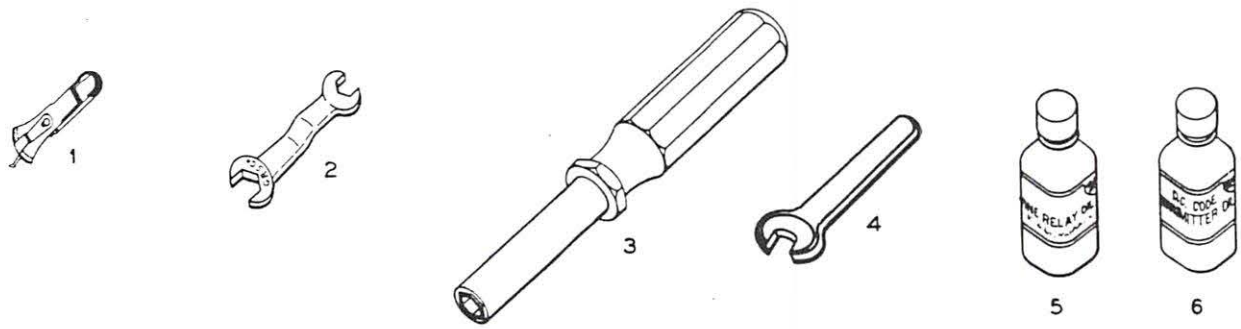
Type K Code Transmitter

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
76	CONNECTOR COMPLETE, dimension "x" = 9-1/4"	P65-548
76A	As above, except dimension "x" = 8-1/4"	P65-549
76B	Same as Ref. 76 except dimension "x" = 7-3/4"	P65-550
76C	Same as Ref. 76 except dimension "x" = 11-1/4"	P65-551
76D	Same as Ref. 76 except dimension "x" = 3-1/4"	P65-552
77	CONNECTOR COMPLETE, as shown	P65-553
78	CONNECTOR COMPLETE, as shown	P65-554
79	CONNECTOR COMPLETE, as shown	P65-555
80	CONNECTOR COMPLETE, as shown	P65-862
81	SCREW, headless, used as terminal post	P65-115
82	NUT, for terminal posts	P76-131
83	NUT, for terminal posts	P62-333

Tools for Type K Relays and Type K Code Transmitters



Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	GRAM GAUGE, scale 50-0-50	P65-931
2	WRENCH, for 3/8" and 1/2" nuts	P65-913
3	WRENCH, insulated, for AAR nuts	P65-901
4	WRENCH, for 9/16" hex. nuts	P65-910
5	OIL, fine relay, 1/2 ounce bottle, M.S. 2-186	P65-925
6	OIL, code transmitter, 1/2 ounce bottle, M.S. 2-212	P65-926

CATALOG SECTION P65

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TYPE K RELAYS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P65-100	350-2		SCREW	3, 23,45
P65-101	350-4		SCREW	47
P65-102	350-5		SCREW	3, 26,37,58,71,78
P65-103	350-6		SCREW	3
P65-104	350-9		SCREW	47, 57
P65-105	350-10		SCREW	25, 33
P65-106	350-17		SCREW	63
P65-107	351-16		SCREW	46, 59
P65-109	361-3		SCREW	5, 60
P65-111	363-2		SCREW	24
P65-112	370-1		SCREW	5, 24
P65-113	373-2		SCREW	60
P65-114	373-3		SCREW	59
P65-115	390-5		SCREW	19, 84
P65-116	390-7		SCREW	82
P65-117	395-1		SCREW	5
P65-118	401-89		PLATE	77
P65-121	401-132		PLATE	60
P65-122	401-135		PLATE	24
P65-124	401-137		PLATE	45
P65-125	401-138		PLATE	4
P65-126	401-157		NAMEPLATE	55
P65-130	401-259		PLATE	81
P65-133	401-302		PLATE	34
P65-135	401-614		PLATE	19
P65-136	401-633		NAME PLATE	
P65-138	401-726		PLATE	15
P65-139	401-753		PLATE	79
P65-140	412-7		SCREW	43
P65-141	412-15		SCREW	20
P65-142	01272-8		NUT	3, 21
P65-143	52896-10		NUT	3
P65-145	493-39		WASHER	25, 29,48,51
P65-146	493-88		WASHER	5
P65-147	504-73		PIN	66
P65-149	577-10		NUT	24
P65-150	577-12		NUT	5, 6,11,24,26,37,41,46,58,59,60,69,77,78
P65-151	577-14		NUT	46, 59
P65-152	586-22		SPRING	67
P65-153	586-83		SPRING	42
P65-154	586-107		SPRING	51
P65-155	586-134		SPRING	19
P65-156	586-135		SPRING	6, 11
P65-157	586-137		SPRING	29
P65-158	586-194		SPRING	34
P65-159	586-196		SPRING	23, 47
P65-161	586-198		SPRING	16
P65-162	786-150		SPRING	19, 25,46,57,70,81
P65-163	846-8		NUT	20, 25,46,57,70,82
P65-164	846-10		NUT	4
P65-165	846-40		NUT	70
P65-169	0652-1		PIN	78
P65-170	0677-2		PIN	5, 24,47,59,78
P65-171	0686		PIN	70
P65-172	1225-16		WASHER	25, 48
P65-173	1225-21		WASHER	78
P65-174	1225-33		WASHER	63
P65-175	1225-50		WASHER	79
P65-176	1225-51		WASHER	77
P65-177	1225-64		WASHER	5
P65-179	1225-75		WASHER	5, 26,48,59
P65-180	1225-76		WASHER	78
P65-181	1225-156		WASHER	70
P65-182	1333-12		WASHER	4, 19,25
P65-183	1333-14		WASHER	70
P65-184	1333-33		WASHER	21
P65-186	1478-1		PIN	60
P65-187	1533-10		WASHER	23, 45,57
P65-188	1533-17		WASHER	
P65-189	1533-20		WASHER	3, 20

CATALOG SECTION P65

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TYPE K RELAYS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P65-190	1533-33		WASHER	5, 26,47,77
P65-191	1533-34		WASHER	70
P65-192	1533-41		WASHER	58, 70
P65-193	1601-28		WASHER	38, 42
P65-194	1601-42		WASHER	59
P65-195	1601-49		WASHER	78
P65-196	1601-53		WASHER	
P65-197	1601-145		WASHER	5
P65-198	03608-12 (SEE A85)		SCREW	
P65-200	03610-112		SCREW	83
P65-202	2539-45		INSULATOR	78
P65-203	2602-27		SCREW	41
P65-205	3018-21		SCREW	37, 43
P65-208	03610-124		SCREW	26
P65-210	3440-29		SCREW	29, 52
P65-211	01272-3		NUT	4, 25,26,48,60
P65-212	03406-8		SCREW	4, 26,48,60
P65-213	03406-28		SCREW	16, 34
P65-214	03406-20		SCREW	12
P65-216	4811-24		SCREW	67
P65-217	4906-97		CONNECTOR	63
P65-218	5075-47GR1		LEAD	70
P65-219	5075-61GR1		LEAD	70
P65-220	5100-41		SCREW	21
P65-221	5971-24		BLOCK	6, 26,29,51
P65-222	5971-36		BLOCK	12
P65-224	7350-29		INSULATOR	25, 47,63
P65-225	7350-109		BUSHING	63
P65-226	7350-113		BUSHING	11
P65-227	7350-269		BUSHING	16, 34
P65-228	8942-60		BUSHING	70
P65-229	9327-7		BLOCK	16
P65-233	12439-15		KNOB	77
P65-234	12563-13		SCREW	77
P65-235	03410-108		SCREW	19
P65-236	03410-164		SCREW	12
P65-237	12578-4		NUT	38, 41
P65-238	12680-6		NUT	66
P65-239	12680-10		NUT	
P65-240	13006-14		SCREW	33, 55
P65-241	13006-16		SCREW	33, 55,63
P65-242	13006-18		SCREW	48
P65-243	13006-47		SCREW 10	
P65-245	13014-76		GASKET	77
P65-246	13014-124		GASKET	78
P65-247	13014-234		GASKET	45, 57
P65-250	13014-237		GASKET	4
P65-251	13014-239		GASKET	71
P65-252	13014-240		GASKET	70
P65-253	13014-248		GASKET	24
P65-254	13014-254		GASKET	81
P65-255	13014-255		GASKET	19
P65-256	13026-17		CONTACT	5, 25,47,58
P65-257	13026-32		CONTACT	
P65-258	13061-33GR2		CONTACT	43
P65-259	13061-54GR1		CONTACT	12
P65-260	13061-56GR2		CONTACT	12
P65-261			CONTACT	66
	13061-76GR1		CONTACT	
	31962-15	2	RIVET	
P65-262			CONTACT	66
	13061-76GR3		CONTACT	
	31962-15	2	RIVET	
P65-263	13061-95GR1		CONTACT	16, 33
P65-264	13061-96GR1		CONTACT	16, 33
P65-265	13063-60		SPRING	79
P65-266	13078-1		NUT	78
P65-267	14078-2		SCREW	29, 51
P65-268	15250-4		NUT	66
P65-269	15350-34		PIN	78
P65-271	01272-1		NUT	19
P65-272	15686-4		SCREW	3
P65-273	15686-3		SCREW	3
P65-274	16111-51		SPRING	4

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TYPE K RELAYS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P65-275	16111-90		SPRING	55, 63
P65-276	16111-91		SPRING	29, 51
P65-277	16538-3		WASHER	11
P65-279	17378-13		STRIP	4
P65-280	17378-14		STRIP	41
P65-281	17546-1		WASHER	81
P65-282	17567-1GR1		STOP	16
P65-283	18050		PLATE	23
P65-284	18052		PLATE	45, 60
P65-286	18053		PLATE	45, 60
P65-287	18120-2		NUT	3, 20
P65-288	18120-3		NUT	19
P65-289	18120-7		NUT	3
P65-290	18547-58		CLIP	82
P65-291	20360-2		SCREW	55, 63
P65-292	21119		WASHER	33, 55, 63
P65-293	21497 GR1		MOUNTING	23
P65-294	21497 GR2		MOUNTING	45, 60
P65-295	21839-2		SCREW	59
P65-296	22148 GR1		RIBBON	82
P65-297	22539-11		WASHER	19
P65-298	22543-9		WASHER	25, 42, 59
P65-299	22543-14		WASHER	59
P65-300	22543-15		WASHER	37, 41
P65-301	22543-25		WASHER	12, 16, 34
P65-303	27510		PIN	77
P65-304	28948-1		NUT	37, 41, 70, 74
P65-305	28979-1		TERMINAL	79
P65-307	28989-16		SCREW	37, 41
P65-308	29151-12		SCREW	4
P65-309	29151-19		SCREW	41
P65-310	29510-9		BASE	77
P65-313	29511-14		COVER	59
P65-314	29511-36		COVER	77
P65-317	29511-55		COVER	63
P65-318	29511-56		COVER	37, 42
P65-319	29511-60		COVER	77
P65-320	29511-79		COVER	19
P65-321	29511-88		COVER	70
P65-322	29511-103GR1		COVER	81
P65-323	29511-105		COVER	45
P65-324	29511-106		COVER	23
P65-325	29511-107		COVER	23, 33
P65-326	29511-108		COVER	45, 51
P65-327	29511-110		COVER	29
P65-328	29511-111		COVER	33
P65-329	29511-112		COVER	55
P65-330	29511-113		COVER	3
P65-331	29511-114		COVER	4
P65-332	29511-115		COVER	11
P65-333	29511-116		COVER	11, 15
P65-334	29514-30		CORE	3, 15, 45
P65-335	29514-51		CORE	23, 41
P65-336	29514-55		CORE	63
P65-337	29514-62		CORE	42
P65-338	29514-104		CORE	82
P65-339	29514-122		CORE	33, 55
P65-340	29514-145		CORE	29, 51
P65-341	29514-148		CORE	38
P65-342	29514-161		CORE	3
P65-343	29514-169		CORE	15
P65-344	29514-175		CORE	45
P65-349	29516-10GR3		CORE	59
P65-350	29516-10GR4		CORE	59
P65-351	29516-12GR1		CORE	4
P65-352	29516-15GR1		CORE	4
P65-353	29516-20GR1		CORE	4
P65-354	29516-22GR1		CORE	15
P65-355	29516-23GR1		CORE	15
P65-356	29519-2GR2		STUD	11
P65-357	29519-3GR1		STUD	16
P65-358	29521-7GR1		CORE	20
P65-359	29521-7GR2		CORE	20

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TYPE K RELAYS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P65-360	29522-15		SUPPORT	55
P65-361	29522-16		SUPPORT	55
P65-362	29522-17		SUPPORT	33
P65-363	29522-18		SUPPORT	33
P65-364	29523-46		ARMATURE	19
P65-365	29524-8GR3		ARMATURE	24
P65-368	29524-9GR2		ARMATURE	46
P65-369	29524-9GR3		ARMATURE	46
P65-370	29524-9GR5		ARMATURE	46
P65-371	29524-9GR7		ARMATURE	46
P65-372	29524-9GR8		ARMATURE	46
P65-374	29524-13GR1		ARMATURE	5
P65-375	29524-17GR1		ARMATURE	63
P65-376	29524-17GR3		ARMATURE	55
P65-377	29524-18GR3		ARMATURE	33
P65-379	29524-21GR1		ARMATURE	37, 42
P65-381	29525-7		SCREW	46, 59
P65-383	29536-1		NUT	66
P65-384	29536-5		NUT	78
P65-385	29545-13		TRUNNION	59
P65-389	30911-7		SLEEVE	11
P65-390	30911-9		SLEEVE	15
P65-391	31066-16GR4		COIL	7
P65-393			COIL	8,
			COMP.W/CON	42
			NECTORS	
	31066-17GR45		COIL	
	42760-259GR1	2	CONNECTORS	
P65-394			COIL	42
			COMP.W/CON	
			NECTORS	
	31066-17GR44		COIL	
	42760-259GR1	2	CONNECTORS	
P65-396	31066-16GR19		COIL	8
P65-397			COIL	7,
			COMP.W/CON	29,
			NECTORS	51
	31066-17GR1		COIL	
	42760-259GR1	2	CONNECTORS	
P65-398			COIL	7,
			COMP.W/CON	29,
			NECTORS	57
	31066-17GR3		COIL	
	42760-259GR1	2	CONNECTORS	
P65-400			COIL	7,
	31066-17GR11		COIL	37
	42760-259GR1	2	CONNECTORS	
P65-402			COIL	8,
	31066-17GR13		COIL	29,
	42760-259GR1	2	CONNECTORS	51
P65-403			COIL	7,
			COMP.W/CON	8,
			NECTORS	29,
	31066-17GR14		COIL	51,
	42760-259GR1	2	CONNECTORS	57
P65-404			COIL	7,
			COMP.W/CON	8,
			NECTORS	29,
	31066-17GR17		COIL	37,
	42760-259GR1	2	CONNECTORS	51
P65-406	31066-20GR4		COIL	7
P65-407	31066-20GR9		COIL	8
P65-408	31066-20GR14		COIL	8
P65-409	31066-32GR1		COIL	7
P65-410			COIL	7,
			COMP.W/CON	8
			NECTORS	
	31066-32GR3		COIL	
	42760-259GR1	2	CONNECTORS	
P65-411	31066-32GR5		COIL-K	
			RELAY	
P65-413			COIL	7,
			COMP.W/CON	15
			NECTORS	
	31066-32GR16		COIL	
	42760-259GR1	2	CONNECTORS	
P65-414			COIL	7,
			COMP.W/CON	8
			NECTORS	
	31066-32GR19		COIL	
	42760-259GR1	2	CONNECTORS	
P65-415			COIL	8
			COMP.W/CON	
			NECTORS	
	31066-32GR24		COIL	
	42760-259GR1	2	CONNECTORS	
P65-416			COIL	7
			COMP.W/CON	
			NECTORS	
	31066-32GR25		COIL	
	42760-259GR2	2	CONNECTORS	

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TYPE K RELAYS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P65-417			COIL COMP.W/CONNECTORS	7
	31066-32GR26		COIL	
	42760-259GR1	2	CONNECTORS	
P65-418			COIL COMP.W/CONNECTORS	7, 15
	31066-32GR27		COIL	
	42760-259GR1	2	CONNECTORS	
P65-421			COIL COMP.W/CONNECTORS	7
	31066-32GR32		COIL	
	42760-259GR2	2	CONNECTORS	
P65-422			COIL COMP.W/CONNECTORS	11
	31066-32GR39		COIL	
	42760-259GR1	2	CONNECTORS	
P65-423	31066-38GR8		COIL	33
P65-424	31066-39GR8		COIL	42
P65-426			COIL COMP.W/CONNECTORS	7
	31066-17GR46		COIL	
	42760-259GR2	2	CONNECTORS	
P65-427	31066-44GR1		COIL	63
P65-429	31066-45GR3		COIL	33, 55, 63
P65-430	31066-45GR8		COIL	8
P65-431	31066-52GR11		COIL	7
P65-435	31066-59GR4		COIL	8, 9
P65-436	31066-59GR5		COIL	8, 9
P65-437	31066-59GR6		COIL	8, 9
P65-438	31066-60GR5		COIL	9
P65-439	31066-62GR8		COIL	
P65-440	31066-62GR9		COIL	
P65-441	31066-65GR3		COIL	11
P65-442	31066-84GR1		COIL	82
P65-443	31066-97GR2		COIL	11
P65-444	31066-99GR1		COIL	55
P65-445	31066-99GR2		COIL	33
P65-447	31066-100GR4		COIL	20
P65-448	31066-100GR7		COIL	20
P65-450	31066-109GR2		COIL	11
P65-451	31066-109GR3		COIL	11
P65-452	31066-118GR1		COIL	20
P65-453	31066-127GR4		COIL	7
P65-454	31267-2		WASHER	77
P65-455	34017-5		WASHER	25, 47, 60
P65-458	35269-3		TRUNNION	5, 24, 46, 59
P65-459	35269-4		TRUNNION	5, 24, 46, 59
P65-460	35269-9		TRUNNION	38, 43
P65-462	35269-12		TRUNNION	38, 43
P65-463	35281-4		NUT	46, 57
P65-464	35281-5		NUT	4
P65-465	35282-2		BUSHING	46, 57
P65-467	35282-5		BUSHING	4
P65-468	35315-17		NUT	82
P65-469	35448		WASHER	42
P65-475	35921-32		SUPPORT	58
P65-476	35921-33		SUPPORT	58
P65-477	35921-50		SUPPORT	37, 41
P65-478	35921-51		SUPPORT	37, 41
P65-479	35921-68		SUPPORT	78
P65-480	35921-101		SUPPORT	37, 41
P65-481	35921-104		SUPPORT	37, 41
P65-482	35921-130		SUPPORT	19
P65-483	35921-131		SUPPORT	20
P65-484	35921-174		SUPPORT	34
P65-485	36177-2		WASHER	23, 45, 55, 81
P65-487	37375-2		ARM	33
P65-488	37380-33		CASE	24
P65-489	37380-5		CASE	
P65-490	37380-7		CASE	77
P65-491	37380-34		CASE	45, 55
P65-492	37380-14		CASE	

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TYPE K RELAYS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P65-493	37380-35		CASE	
P65-494	37380-17		CASE	78
P65-495	37380-25		CASE	19
P65-496	37380-26		CASE	82
P65-497	37380-28		CASE	70
P65-498	37404-1		NUT	5, 25,37,41,47,58,60
P65-499	37404-2		NUT	11, 16,34
P65-500	37412-73		INSULATION	11
P65-501	37412-205		INSULATION	16, 34
P65-502	37696-4		SCREW	33, 55,63
P65-504	38275-17		SCREW	3, 25,47,55,79
P65-505	38291-5		SCREW	77
P65-506	38291-6		SCREW	77
P65-510	39043-21GR5		ARMATURE	63
P65-515	41885-83		PLATE	30, 52
P65-516	42302-12		SCREW	19
P65-520	42404		SCREW	78
P65-521	42561-6GR3		ARMATURE	23
P65-522	42561-6GR4		ARMATURE	23, 29
P65-523	42561-6GR6		ARMATURE	29
P65-524	42561-6GR7		ARMATURE	33
P65-525	42561-6GR8		ARMATURE	23
P65-526	42561-9GR2		ARMATURE	45
P65-528	42561-9GR7		ARMATURE	51
P65-529	42561-9GR10		ARMATURE	51
P65-530	42561-9GR11		ARMATURE	55
P65-531	42561-9GR12		ARMATURE	45
P65-533	42561-14GR1		ARMATURE	3
P65-534	42561-16GR2		ARMATURE	11
P65-535	42561-25GR1		ARMATURE	11
P65-536	42561-36GR1		ARMATURE	15
P65-538	42760-1GR6		CONNECTOR	59
P65-539	42760-1GR21		CONNECTOR	37, 41
P65-540	42760-12GR9		CONNECTOR	67
P65-541	42760-12GR13		CONNECTOR	66
P65-542	42760-12GR14		CONNECTOR	66, 67
P65-543	42760-23GR1		CONNECTOR	66
P65-545	42760-23GR6		CONNECTOR	66
P65-547	42760-81GR1		CONNECTOR	20
P65-548	42760-102GR1		CONNECTOR	84
P65-549	42760-102GR2		CONNECTOR	84
P65-550	42760-102GR3		CONNECTOR	84
P65-551	42760-102GR4		CONNECTOR	84
P65-552	42760-102GR5		CONNECTOR	84
P65-553	42760-103GR1		CONNECTOR	84
P65-554	42760-104GR1		CONNECTOR	84
P65-555	42760-104GR2		CONNECTOR	84
P65-556	42760-190GR1		CONNECTOR	16, 33
P65-557	42792-10		INSULATOR	4, 25,47,58
P65-558	42792-14		INSULATOR	83
P65-559	42792-15		INSULATOR	
P65-560	42792-17		INSULATOR	20
P65-561	42799-7GR9		CONTACT	58
P65-562	42799-7GR13		CONTACT	37
P65-563	42819-1GR1		BRACKET	4
P65-566	42819-7GR1		BRACKET	20
P65-567	42819-8GR1		BRACKET	83
P65-568	42819-9GR2		BRACKET	71
P65-569	42827-5		BRACKET	79
P65-570	42827-8		BRACKET	77
P65-573	42836-22		YOKE	63
P65-574	42836-30		YOKE	19
P65-576	42836-32		YOKE	3, 11
P65-577	42836-34		YOKE	71
P65-578	42836-36		YOKE	37
P65-579	42836-7		YOKE	23, 33,41
P65-582	42836-40		YOKE	33, 55
P65-583	42836-42		YOKE	55
P65-585	42839-8		NUT	3, 21,23,25,47,57,59,70
P65-587	46989-14		NUT	79
P65-588	42840-3		NUT	3, 24,26,47,77,82
P65-589	42840-5		NUT	59, 70
P65-590	42840-7		NUT	78
P65-593	43083-3		WASHER	78
P65-595	45211-6		BLOCK	59
P65-596	45572-7		SCREW	11

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TYPE K RELAYS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P65-598	46048-8GR4		BLOCK	26, 57
P65-599	46048-8GR10		BLOCK	29, 51
P65-601	46048-10GR4		BLOCK	5, 37
P65-602	46048-15GR9		BLOCK	51
P65-603	46048-18GR1		BLOCK	63
P65-604	46989-11		NUT	78
P65-605	47508-47		BLOCK	58
P65-606	47508-60		BLOCK	37, 41
P65-607	48141-10		CONTACT	66
P65-608	48141-29		CONTACT	67
P65-609	48141-63		CONTACT	41
P65-611	48141-79		CONTACT	67
P65-613	48565-14		SCREW	77
P65-614	48565-20		SCREW	25, 46, 57
P65-615	48565-22		SCREW	19
P65-617	49092-147		BRACKET	33
P65-618	49092-148		BRACKET	55
P65-619	49227-2		NUT	15, 24, 30, 46
P65-621	49476-81		STUD	70
P65-622	49522-22		SCREW	79
P65-624	49655-221		SPACER	81
P65-626	49664-24		FINGER	67
P65-627	49683-1		SCREW	21
P65-629	50595-8		SCREW	82
P65-631	51029-2		NUT	38, 42
P65-633	51320-5GR1		SUPPORT	25, 47, 58
P65-634	51320-5GR2		SUPPORT	48, 58
P65-635	51320-5GR3		SUPPORT	25, 29, 47, 51
P65-636	51320-5GR4		SUPPORT	48, 51
P65-637	51320-16GR1		SUPPORT	26
P65-638	51320-16GR2		SUPPORT	48
P65-639	51320-26GR1		SUPPORT	78
P65-640	51320-40GR4		SUPPORT	4
P65-641	51320-40GR2		SUPPORT	4, 15
P65-642	51320-40GR3		SUPPORT	4, 15
P65-644	51320-45GR1		SUPPORT	78
P65-645	51321 GR1		CONTACT	78
P65-646	51321-31GR1		CONTACT	41
P65-647	51321-13GR2		CONTACT	5, 11, 26
P65-648	51336-3GR1		FINGER	77
P65-650	51336-5GR1		FINGER	77
P65-651	51336-9GR2		FINGER	78
P65-652	51336-11GR2		FINGER	79
P65-653	51336-11GR4		FINGER	79
P65-654	51336-13GR1		FINGER	79
P65-655	51336-18GR2		FINGER	78
P65-656	51336-18GR4		FINGER	78
P65-657	51336-27GR1		FINGER	79
P65-658	51433-77		CARD	81
P65-659	51553-5		FORM	6, 23, 45
P65-660	51553-23		FORM	20
P65-662	51553-41		FORM	60
P65-663	51553-45		FORM	71
P65-667	51553-80		FORM	11
P65-669	51559-7		TERMINAL	26, 58
P65-670	51559-8		TERMINAL	26, 58
P65-674	51559-25		TERMINAL	48
P65-675	51559-39		TERMINAL	12, 15, 25, 58
P65-677	51559-79		TERMINAL	4
P65-680	53007		MAGNET	57
P65-683	53007-11		MAGNET	21
P65-684	53007-12		MAGNET	29, 51
P65-685	53007-15		MAGNET	15
P65-686	53007-18		MAGNET	38
P65-689	53011-22GR3		FINGER	65
P65-690	53011-22GR4		FINGER	65
P65-691	53011-37GR1		FINGER	37
P65-692	53011-41GR1		FINGER	65
P65-694	53011-41GR10		FINGER	65
P65-698	53011-41GR15		FINGER	65
P65-699	53011-41GR19		FINGER	65
P65-700	53011-42GR3		FINGER	65
P65-701	53011-42GR9		FINGER	65
P65-702	53011-43GR1		FINGER	66

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CAT.NO.	DRAWING NO. QTY	NAME	PG.
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P65-704	53013-4GR1	FINGER	66
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	42760-259GR1	2	CONNECTORS	
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CATALOG SECTION P71

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GENERAL RAILWAY SIGNAL
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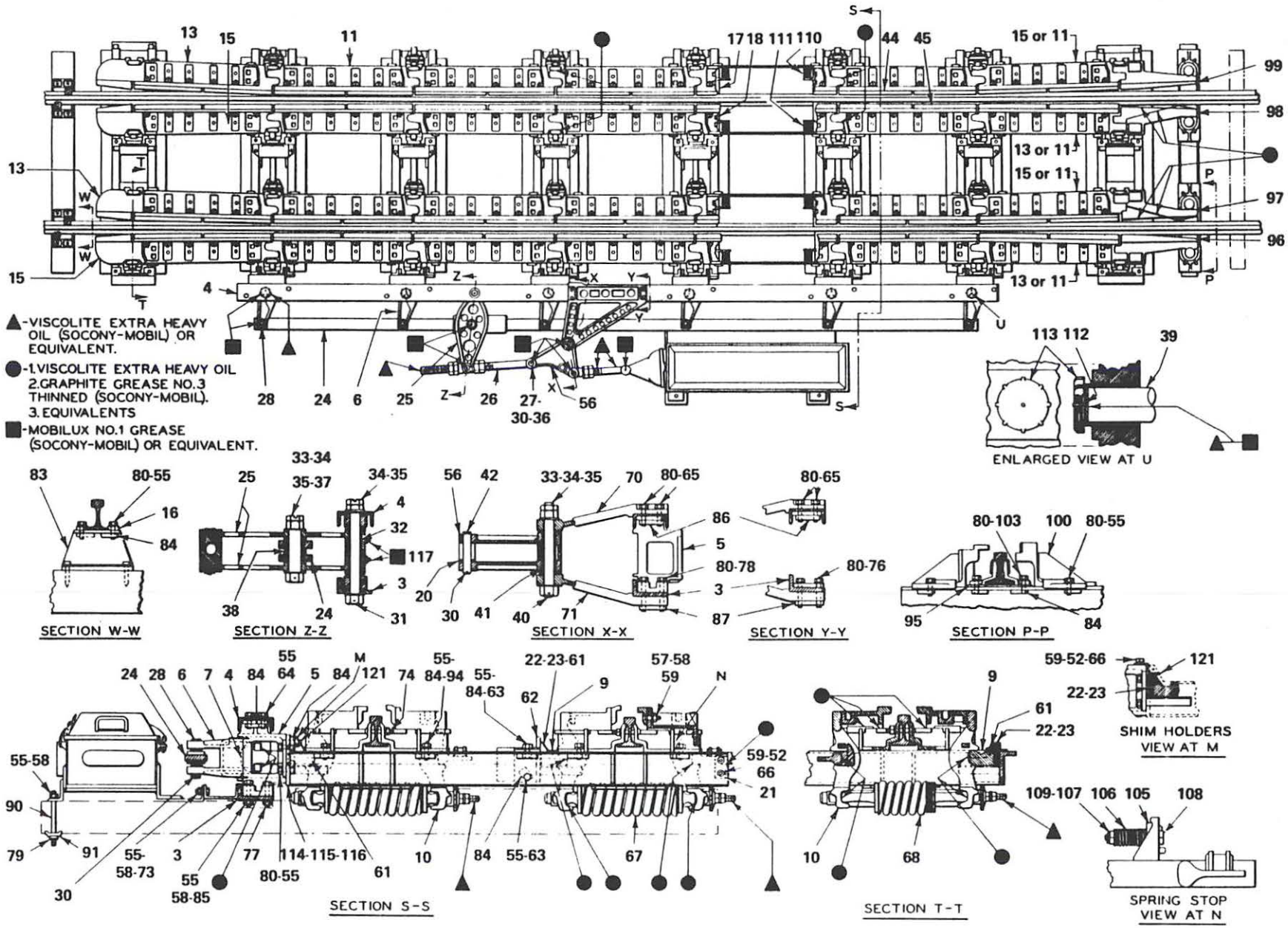


Types E1, E1H, E1HS, and E160XHD car retarders.

Types E1, E1H, E1HS, E160, E160XHD, Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	**BEAM COMPLETE,** intermediate right-hand, 1 required for each operating section	**P71-550**
1A	Same as 1 except with rail supports	**P71-900**
2	**BEAM COMPLETE,** intermediate left-hand, 1 required for each operating section	**P71-551**
2A	Same as Ref. 2 except with rail supports	**P71-901**
3	**ANGLE BAR COMPLETE,** includes channel for mounting mechanism, for 5 beam retarder, left or right side, lever position between 1and 2 end bearings, 1 required for each mechanism	**P71-565**
3A	Same as above except for 7 beam retarder, lever position between 2 and 3 end bearings	**P71-566**
3B	Same as 3A except for 8 beam retarder	**P71-567**
3C	Same as 3A except for 9 beam retarder	**P71-568**
3D	Same as 3 except for 7 beam retarder	**P71-569**
3E	Same as 3 except for 6 beam retarder	**P71-902**
3F	Same as 3A except for 10 beam retarder	**P71-903**
3G	Same as 3 except for 8 beam retarder	**P71-574**
4	**CHANNEL BAR COMPLETE,** for 6 beam retarder, left or right side, lever position between1 and 2 end bearings, 1 required for each mechanism	**P71-904**
4A	Same as above except for 8 beam retarder, lever position between 2 and 3 end bearings	**P71-570**
4B	Same as 4A except for 9 beam retarder	**P71-571**
4C	Same as 4 except for 7 beam retarder	**P71-572**
4D	Same as 4 except for 5 beam retarder	**P71-573**
4E	Same as 4A except for 10 beam retarder	**P71-905**
4F	Same as 4 except for 8 beam retarder	**P71-575**
4G	Same as 4A except for 7 beam retarder	**P71-576**
5	**BEARING COMPLETE,** cross bar operating crank, 1 required for each intermediate beam (Ref. 1).	**P71-224**
6	**CRANK COMPLETE,** cross bar operating, 1 required for each intermediate beam (Ref. 1)	**P71-486**
7	**CROSS BAR COMPLETE,** see page 35	
8	**ANGLE,** bearing shim hold down, 1 required for each intermediate beam (Ref. 1) if specified instead of Ref. 121	**P71-638**
9	**PLATE,** bearing shim hold down, 2 required for each intermediate beam (Ref. 1), 4 required for each inert end beam (Ref. 88)	**P71-116**
10	**LEVER,** shoe beam, for E1, E1H and E1HS retarders, 4 required for each intermediate beam (Ref. 1) and each inert end beam (Ref. 88)	**P71-563**
10A	Same as 10 except for use in E160XHD retarders	**P71-564**

Types E1, E1H, E1HS, E160, E160XHD, Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
11	**SHOE BEAM,** intermediate, 4 required for each intermediate beam (Ref. 1) plus 4 more if Ref. 13 is not required, 2 required for each Ref. 139 , 4 required for each intermediate inert section. If pin puller retarder, 3 required for each intermediate beam (Ref. 1) less 1 for each Refs. 13, 15 and 139	**P71-469**
12	**CHANNEL BAR COMPLETE,** 5'6" extension, left-hand, for use as Ref. 4 odd lengths	**P71-907**
12A	Same as 12 except right-hand	**P71-908**
13	**SHOE BEAM,** end, left-hand entering, 2 required for entering end except abuts or if flange guides specified	**P71-218**
14	**ANGLE BAR COMPLETE,** 5'6" extension, left-hand, for use as Ref. 3 odd lengths	**P71-909**
14A	Same as 14 except right-hand	**P71-910**
15	**SHOE BEAM,** end, right-hand entering, 2 required for entering end except abuts or if flange guides specified	**P71-219**
16	**CLIP,** rail, for use with 105 lb. Dudley, 100 lb. RE, 115 lb. RE or 132 lb. RE rail. 2 required for each Refs. 83 and 89, 4 required for each Refs. 95, 143, 144, and 150. If 52600-41 layout add 2 for each Refs. 139 and 140	**P71-404**
16A	Same as 16 except for use with 90 lb. ARA-A rail	**P71-911**
17	**CHAIR,** outside, with coil spring bosses, 2 required for each Ref. 1 and Ref. 88. For ordering references see page 37.	
18	**CHAIR,** inside, with coil spring bosses, 2 required for each Ref. 1 and Ref. 88. For ordering references see page 37.	
19	**OPERATING BAR COMPLETE,** 5'6" extension, for use as Ref. 24 odd lengths	**P71-922**
20	**WASHER,** shim, one required for each Ref. 28, 6 for each Ref. 42	**P71-139**
21	**SPACER,** for beam Ref. 1	**P71-204**
21A	Same as above except hard faced	**P71-923**
22	**SHIM,** fixed lever bearing, .120" thick, 2 required for each Ref. 1 and 88	**P71-352**
23	**SHIM,** fixed lever bearing, 1/4" thick, 2 required for each Ref. 1, 12 for each Ref 88	**P71-353**
23A	Same as above except 1/2" thick	**P71-924**
23B	Same as above except 3/4" thick	**P71-925**
24	**OPERATING BAR COMPLETE,** for 8 beam retarder, left or right side, 1 required for each Ref. 3, lever position between 2 and 3 end bearings	**P71-589**
24A	Same as 24 except for 7 beam retarder	**P71-590**
24B	Same as 24 except for 5 beam retarder with lever position between 1 and 2 end bearings	**P71-591**
24C	Same as 24 except for 9 beam retarder	**P71-592**
24D	Same as 24B except for 6 beam retarder	**P71-926**

Types E1, E1H, E1HS, E160, E160XHD, Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
24E	Same as 24 except for 10 beam retarder	**P71-927**
24F	Same as 24B except for 8 beam retarder	**P71-593**
24G	Same as 24B except for 7 beam retarder	**P71-594**
25	**LEVER COMPLETE,** upper, for adjusting rod and operating bar, for E1 or E160 retarder, 2 required for each Ref. 3	**P71-583**
25A	Same as 25 except without oiler	**P71-928**
25B	**LEVER COMPLETE,** upper, for E160XHD retarder, 1 required for each Ref. 3	**P71-929**
25C	Same as 25B except lower	**P71-930**
26	**ADJUSTING ROD COMPLETE,** 1 required for each Ref. 3	**P71-582**
27	**PIN COMPLETE,** 2 1/2" x 9 1/4", for connecting adjusting rod to bell crank, 1 required for each Ref. 3	**P71-153**
28	**PIN COMPLETE,** 2" x 8 1/2", for connecting operating bar to crank, 1 required for each Ref. 6	**P71-611**
29	**OILER,** straight, 1/8" NPT for references 27, 28, 37, 39, 42, and 56	**P85-378**
30	**COTTER PIN,** 1/4" x 3", for references 27, 28 and 42	**P71-931**
31	**STUD COMPLETE,** 2 1/2" x 19 3/16", 1 required for each Ref. 3	**P71-588**
32	**BUSHING,** lever, 3" x 11 1/4", 1 required for each Ref. 3	**P71-186**
33	**NUT,** 2"- 8 UNC-2B X 2" thick, hex., 1 required for each Ref. 37 & 40	**P71-544**
33A	Same as above except locknut 2 1/4" thick, 1 required for each Ref. 31, 37 and 40	**P71-932**
34	**NUT;** 2" - 8 UNC-2B x 2 1/8" thick, hex., 1 required for each Ref. 37 and 40, 2 for each Ref. 31 (not required if Ref. 33A is used)	**P71-545**
35	**WASHER,** 2 1/8" x 4 1/2" x .183" thick, 1 required for each Ref. 31, 37, and 40	**P71-142**
36	**WASHER,** shim, 2 9/16" x 4 1/2" x 1/16"thick, 10 required for each Ref. 27	**P71-140**
37	**STUD COMPLETE,** 3" x 16 3/8", for E1 and E160 retarders, 1 required for each Ref. 3	**P71-586**
37A	Same as above except for E160XHD retarder	**P71-933**
38	**BUSHING,** operating bar and lever, 4" x 5", 1 required for each Ref. 37	**P71-185**
39	**PIN,** crank, 3" x 18 1/4", 1 required for each Ref. 5	**P71-136**
40	**STUD COMPLETE,** 2 1/2" x 21 7/8", bell crank and bearing bracket, for E1 and E160 retarders, 1 required for each Ref. 56	**P71-587**
40A	Same as above except 30 1/8" long, for E160XHD retarder	**P71-934**
41	**BUSHING,** 3" x 10", bell crank and bearing bracket, 1 required for each Ref. 56	**P71-187**
42	**PIN,** 2" x 9 1/4", throw rod and bell crank, 1 required for each Ref. 56	**P71-152**
43	**OILER,** straight, 1/4" threads, 1 required for each Ref. 39	**P71-327**

Types E1, E1H, E1HS, E160, E160XHD, Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
44	**SHOE,** outside, cast steel No. 48, 4 1/2" high x 32 1/2" long, 1 required for each Ref. 11, 13, and 15, 2 for each Ref. 139	**P71-529**
44A	Same as above except 4" high, for E1 retarder only	**P71-531**
44B	Same as 44 except 65 1/2" long, with 6 mtg. holes	**P71-935**
45	**SHOE,** inside, cast steel No. 43, 4 1/2" high x 32 1/2" long, 1 required for each Ref. 11, 13, and 15, minus 2 for each Ref. 139	**P71-530**
45A	Same as above except cast steel No. 50	**P71-532**
46	**PLATE COMPLETE,** for retarder ties, 1 required for each Ref. 1 and 88	**P71-341**
47	**LEAF SPRING,** 5 leaf, not used if Ref. 110 used	**P71-936**
48	**LEAF SPRING,** 7 leaf, not used if Ref. 111 used	**P71-937**
49	**SPRING BLOCK,** for Ref. 47 and 48 if used	**P71-938**
50	**U-BOLT,** 1/2" - 13, for Ref. 47 and 48 if used	**P71-939**
51	**NUT,** for U-bolt	**P91-249**
52	**WASHER,** lock, 1/2" x .125", 4 required for each Ref. 49, 1 for each Ref. 66	**P50-101**
53	**WASHER,** spacer, for Ref. 47 and 48 if used	**P71-940**
54	**NUT,** 1" - 14 x 1" thick, hex, 1 required for each Ref. 57	**P71-941**
55	**WASHER,** lock, 1" x 3/8" thick, 1 required for each Ref. 63, 64, 65, 73, 75, 76, 77, 78, 80, 90, 94, 103 and 148	**P71-106**
56	**BELL CRANK,** for operating rod, 1 required for each Ref. 3	**P71-441**
57	**BOLT,** T-head, 1" - 14 x 3 1/2", 3 required for each Ref. 44 and 45	**P71-942**
57A	Same as above except 1"-8	**P71-943**
58	**NUT,** 1" -8 x 1" thick, hex, 1 required for each Ref. 57A, 73, 75, 77, 90 and 148	**P71-944**
59	**WASHER,** lock, 1" x 3/8" thick, 1 required for each Ref. 57	**P91-229**
60	**BOLT,** 3/4" - 10 x 2", hex head, Grade 5, 4 required for each Ref. 21, 1 for each Ref. 121	**P71-163**
61	**BEARING,** for fixed lever, 1 required for every 2 Ref. 10	**P71-202**
62	**BRACKET,** fixed lever bearing, 1 required for each cross bar P71-577	**P71-205**
62A	Same as above except for cross bar P71-578	**P71-206**
63	**BOLT,** 1" - 8 x 2 1/2", hex head, Grade 8, 4 required for each Ref. 62 if huck bolt not used	**P71-945**
63A	**HUCK BOLT,** 1" x 1 1/4" to 1 1/2" grip, 4 required for each Ref. 62 if Ref. 63 not used, 2 for each Ref. 17 and 18	**P71-946**
64	**BOLT,** 1" - 8 x 3", hex head, Grade 8, 2 required for each Ref. 1 minus 1 for each Ref. 3 if huck bolt not used	**P71-947**
64A	**HUCK BOLT,** 1" x 1 1/2" to 1 3/4" grip, 2 required for each Ref. 3 if Ref. 64 not used	**P71-948**

Types E1, E1H, E1HS, E160, E160XHD, Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
65	**BOLT,** 1" - 8 x 4", hex head, Grade 8, 4 required for each Ref. 3 if huck bolt not used	**P71-949**
65A	**HUCK BOLT,** 1" x 2 1/2" to 2 3/4" grip, 4 required for each Ref. 3 if Ref. 65 not used	**P71-950**
66	**BOLT,** 1/2" - 13 x 1 3/4", hex head, 1 required for each Ref. 8 and 9	**P71-180**
67	**SPRING ROD COMPLETE,** intermediate, 2 required for each Ref. 1 except pin puller requires 1 per Ref. 1	**P71-457**
67A	Same as above except for light (empty) cars	**P71-458**
68	**SPRING ROD COMPLETE,** inert, 2 required for each Ref. 88, pin puller requires 1 for each Ref. 1	**P71-460**
69	(not used)	
70	**BRACKET,** upper bell crank, for E1 and E160, 1 required for each Ref. 3	**P71-585**
70A	Same as above except for E160XHD	**P71-951**
71	**BRACKET,** lower bell crank, for E1 and E160, 1 required for each Ref. 3	**P71-584**
71A	Same as above except for E160XHD	**P71-952**
72	**LAG SCREW,** 1" x 6", hex. head, 4 required for each Ref. 83 and 144 except for layout 52600-41, 10 required for each Ref. 136 and 3 for each Ref. 137 and 138	**P71-613**
73	**BOLT,** 1" - 8 x 2 3/4", hex head, Grade 8, 9 required for each Ref. 3	**P71-953**
74	**BOLT,** track, 1" - 8 x 5 1/2", with hex. nut, 2 required for each Ref. 17	**P71-212**
74A	Same as above except 6" long	**P71-213**
74B	Same as Ref. 74 except 1 1/8" - 7 x 6"	**P71-954**
74C	Same as Ref. 74 except 7" long, without nut	**P71-955**
74D	Same as Ref. 74 except 1 1/16" - 8 x 6"	**P71-956**
75	**ROD,** 1" - 8 x 15" long, threaded both ends, 2 required for each Ref. 46 and 4 for each Ref. 95 and 143 (52600-41 layout requires an additional 26)	**P71-309**
75A	Same as above except 14" long	**P71-310**
75B	Same as Ref. 75 except 21" long	**P71-957**
75C	Same as Ref. 75 except 12" long	**P71-958**
75D	Same as Ref. 75 except 17" long	**P71-698**
76	**BOLT,** 1" - 8 x 6", hex.head, Grade 8, 2 required for each Ref. 71 if huck bolt not used	**P71-959**
76A	**HUCK BOLT,** 1" x 4" - 4 1/2" grip, 2 required for each Ref. 71 if Ref. 76 not used	**P71-960**
77	**BOLT,**1" - 8 x 5 1/2", hex. head, Grade 8, 2 required for each Ref. 1 less1 for each mechanism	**P71-961**
77A	**HUCK BOLT,** 1" x 3 1/2" - 3 3/4" grip, 2 required for each Ref. 1 less 1 for each mechanism	**P71-962**

Types E1, E1H, E1HS, E160, E160XHD, Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
78	**BOLT,** 1" - 8 x 7 1/2", hex. head, Grade 8, 2 required for each Ref. 71 if huck bolt not used	**P71-963**
78A	**HUCK BOLT,** 1" x 5 1/4" - 5 1/2" grip, 2 required for each Ref. 71 if Ref. 78 not used	**P71-964**
79	**NUT,** 1" - 8 x 7/8" thick, square, 1 required for each Ref. 75 and 90	**P71-102**
80	**BOLT,** 1" - 8 x 3 1/2", 4 required for each Ref. 5 and 1 for each Ref. 16 and 100 if huck bolt not used	**P71-965**
80A	**HUCK BOLT,** 1" x 2" - 2 1/4" grip, 1 required for each Ref. 16 and 100 if Ref. 80 not used	**P71-966**
81	**NUT,** 3/4" - 10 x 47/64" thick, 1 required for each Ref. 60 less 1 for each Ref. 5	**P76-105**
82	**WASHER,** lock, 3/4" x 1/4" thick, 1 required for each Ref. 60	**P71-100**
83	**PEDESTAL,** for supporting rails on end ties, for 100 lb., 112 lb. and 115 lb. RE, 105 lb. Dudley and 119 lb. CFI rails, has 14" mounting hole centers and 7" hole centers for mounting non-insulated joint rail	**P71-214**
83A	Same as above except has 18" mounting hole centers and 7" or 11" hole centers for non-insulated or insulated joint rail	**P71-967**
83B	Same as Ref. 83 except for 130 lb., 131 lb., 133 lb., 136 lb., and 140 lb. RE rail and has 7 5/8" hole centers for non-insulated joint rail	**P71-215**
83C	Same as Ref. 83 except for 127 lb. Dudley rail and has 18" mounting hole centers and 7 7/8" or 12" hole centers for non-insulated or insulated joint rail	**P71-216**
83D	Same as Ref. 83B except has 18" mounting hole centers and 7 5/8" or 11" hole centers for non-insulated or insulated joint rail	**P71-217**
84	**STRAP NUT,** single, 1" - 8 x 3 1/4" long, Grade B, 1 required for each Ref. 63, 64, 80, 94, and 103 if huck bolt not used	**P71-561**
85	**STRAP NUT,** single, 1" - 8 x 5" long, Grade B, 2 required for each mechanism	**P71-562**
86	**STRAP NUT,** double, 3 1/2" hole centers, Grade B, 2 required for each Ref. 70 if huck bolts not used	**P71-560**
87	**STRAP NUT,** double, 4 1/4" hole centers, Grade B, 2 required for each Ref. 71 if huck bolts not used	**P71-559**
88	**BEAM COMPLETE,** inert end, 8' 6" long	**P71-552**
88A	Same as above except with spacers	**P71-968**
89	(not used)	
90	**ROD,** threaded both ends (see Ref. 75 & 75A-D)	**P71-969**
91	**WASHER,** 1", O.G.	**P71-374**

Types E1, E1H, E1HS, E160, E160XHD, Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME					CATALOG NUMBER
	ALL DIMENSIONS IN INCHES					
92	**PLATE,** shim	**SIZE**	**NO. HOLES**	**DIA. HOLES**	**HOLE CENTERS**	
		8x10 5/8 x1/8	2	1 3/16	5 x 7	**P71-970**
		8x10 5/8x3/16	2	1 3/16	5 x 7 5/8	**P71-297**
		8x10 5/8 x1/4	2	1 3/16	5 x 7 5/8	**P71-298**
		8x10 5/8x7/16	2	1 3/16	5 x 7	**P71-302**
		8x10 5/8x1/2	2	1 3/16	5 x 7	**P71-288**
		8x10 5/8 x5/8	2	1 3/16	5 x 7	**P71-289**
		8x10 5/8 x5/8	2	1 3/16	5 x 7 5/8	**P71-290**
		8x10 5/8x11/16	2	1 3/16	5 x 7 5/8	**P71-971**
		8x10 5/8x3/4	2	1 3/16	5 x 7	**P71-295**
		8x10 5/8x3/4	2	1 3/16	5 x 7 5/8	**P71-291**
		8x10 5/8 x 1	2	1 3/16	5 x 7	**P71-294**
		8 x10 5/8 x 1	2	1 3/16	5 x 7 5/8	**P71-972**
		8x15 1/4x 1/8	2	1 3/16	5 x 12 (on tabs)	**P71-292**
		8x15 1/4x5/16	2	1 3/16	5 x 11 (on tabs)	**P71-973**
		8x15 1/4x3/8	2	1 3/16	5 x 11 (on tabs)	**P71-974**
		8x15 1/4x1/2	2	1 3/16	5 x 11 (on tabs)	**P71-293**
		8x15 1/4x5/8	2	1 3/16	5 x 11 (on tabs)	**P71-296**
		8x 17 x 3/16	4	1 1/8	5 x 14	**P71-975**
		8x 17 x 5/8	4	1 1/8	5 x 14	**P71-300**
		8x 17 x 3/4	2	1 1/8	5 x 14	**P71-287**
		8x 17 x 1	4	1 1/8	5 x 14	**P71-976**
		8x 22 x 5/8	4	1 1/8	5 x 18	**P71-301**
		8x 22 x 3/4	4	1 1/8	5 x 18	**P71-299**
		8x 26 x 3/4 (on 26" centerline)	2	1 1/8	5	**P71-977**
93	**WASHER,** lock, for 1" bolt, 1 required for each Ref. 74					**P71-106**
93A	Same as above except for 1 1/8" bolt					**P71-978**
94	**BOLT,** 1" - 8x 3", hex. head, Grade 8, 2 required for each Ref. 17 and 18 if huck bolt not used					**P71-947**
94A	Same as above except 3 1/4" long					**P71-433**
95	**BEAM COMPLETE,** 9' long, for 130 lb., 131 lb., and 132 lb. RE rail					**P71-553**
95A	Same as above except for 100 lb. and 115 lb. RE, and 105 lb. Dudley rail					**P71-554**
95B	Same as Ref. 95 except for 127 lb. Dudley rail					**P71-555**
95C	Same as Ref. 95 except for 140 lb. RE rail					**P71-556**
96	**WHEEL SUPPORT,** for flange guide, left-hand					**P71-231**

Types E1, E1H, E1HS, E160, E160XHD, Car Retarders

Parts List

Order by catalog number and name shown in bold type

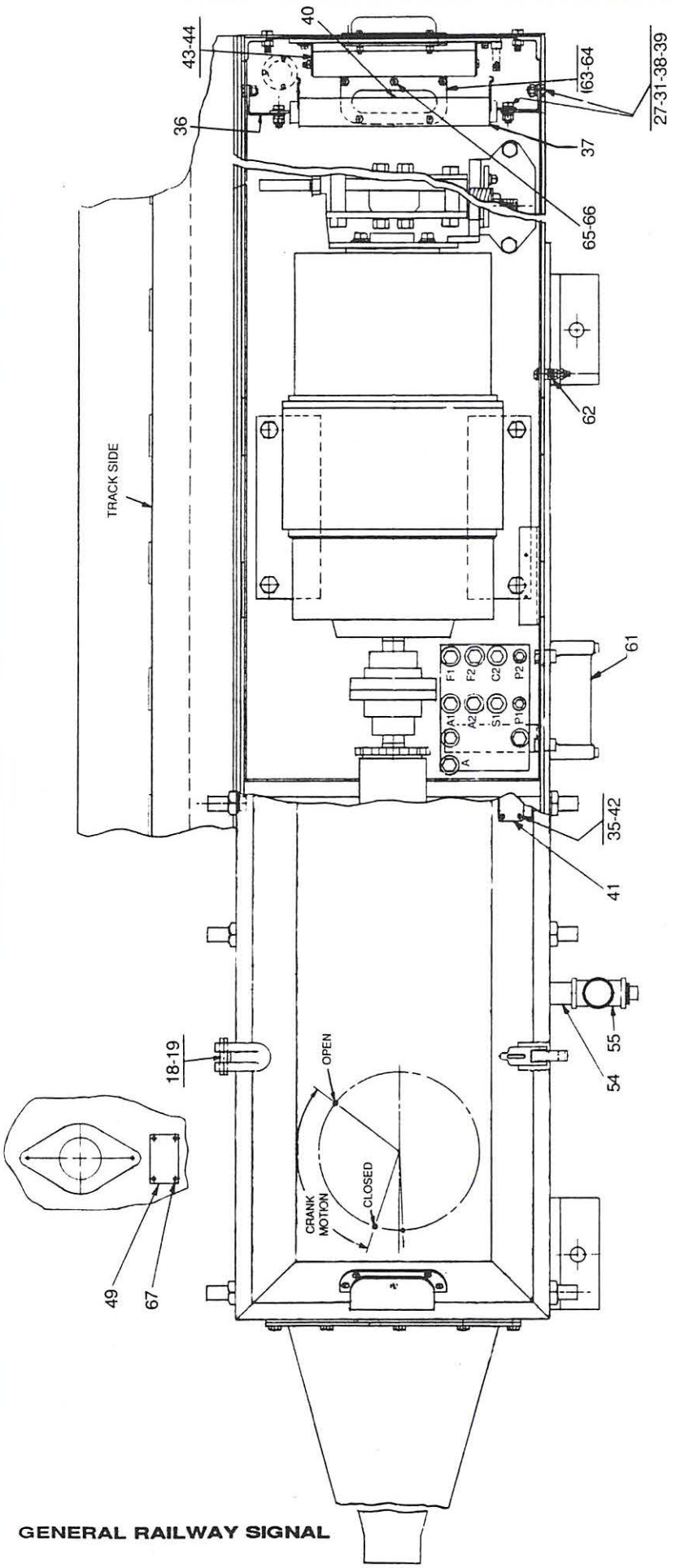
REF.	NAME	CATALOG NUMBER
97	**FLANGE GUIDE,** left-hand	**P71-234**
98	**FLANGE GUIDE,** right-hand	**P71-233**
99	**WHEEL SUPPORT,** for flange guide, right-hand	**P71-232**
100	**BEARING,** for wheel support	**P71-203**
101	**PLATE** (see Ref. 92)	
102	**PLATE** (see Ref. 92)	
103	**BOLT,** 1" - 8 x 4 1/2", hex. head, Grade 8, 4 required for each Ref. 95 and 143 if huck bolt not used	**P71-979**
103A	Same as above except 5" long	**P71-980**
103B	Same as Ref. 95 except 7" long	**P71-981**
103C	**HUCK BOLT,** 1" X 3 1/2" - 3 3/4" grip, 4 required for each Ref. 95 and 143 if Ref. 103 or 103A or B not used	**P71-960**
103D	Same as Ref. 103C except 4" - 4 1/4" grip	**P71-962**
103E	Same as Ref. 103C except 5 1/4" - 5 1/2" grip	**P71-964**
104	**TIE STRAP,** 2 required for each Ref. 95 and 143	**P71-394**
105	**STOP,** for cross bars, 1 required for each Ref. 7	**P71-237**
106	**SPRING,** for cross bars, 1 required for each Ref. 7	**P71-160**
107	**NUT,** for cross bar bolt, 1 required for each Ref. 7	**P71-351**
108	**BOLT,** 1" - 8 x 6", for cross bar, 1 required for each Ref. 7	**P71-440**
109	**COTTER PIN,** 1/4" x 1 3/4" long, 1 required for each Ref. 7	**P91-231**
110	**SPRING,** shoe beam return coil, painted gray, for use opposite mechanism side, 1 required for each Ref. 11, 13, and 15, minus 1 for each Ref. 139	**P71-158**
111	**SPRING,** shoe beam return coil, painted black, for use on mechanism side, 1 required for each Ref. 11, 13, and 15, minus 1 for each Ref. 140	**P71-159**
112	**RING,** crank pin retainer	**P71-182**
113	**CAP COMPLETE,** for crank pin	**P71-369**
114	**ANGLE,** shim, .1046" thick, 1 required for each Ref. 5	**P71-639**
115	**ANGLE,** shim, .0598" thick, 2 required for each Ref. 5	**P71-640**
116	**ANGLE,** shim .0299" thick, 2 required for each Ref. 5	**P71-641**
117	**OILER,** 67 1/2 degree elbow, 1/8 NPT, 1 required for each Ref. 25A	**P50-753**
118	**STRAP,** tie	**P71-982**
119	**PLATE,** shim for references see Ref. 92	
120	**PLATE,** shim for pedestal, see Ref. 92	

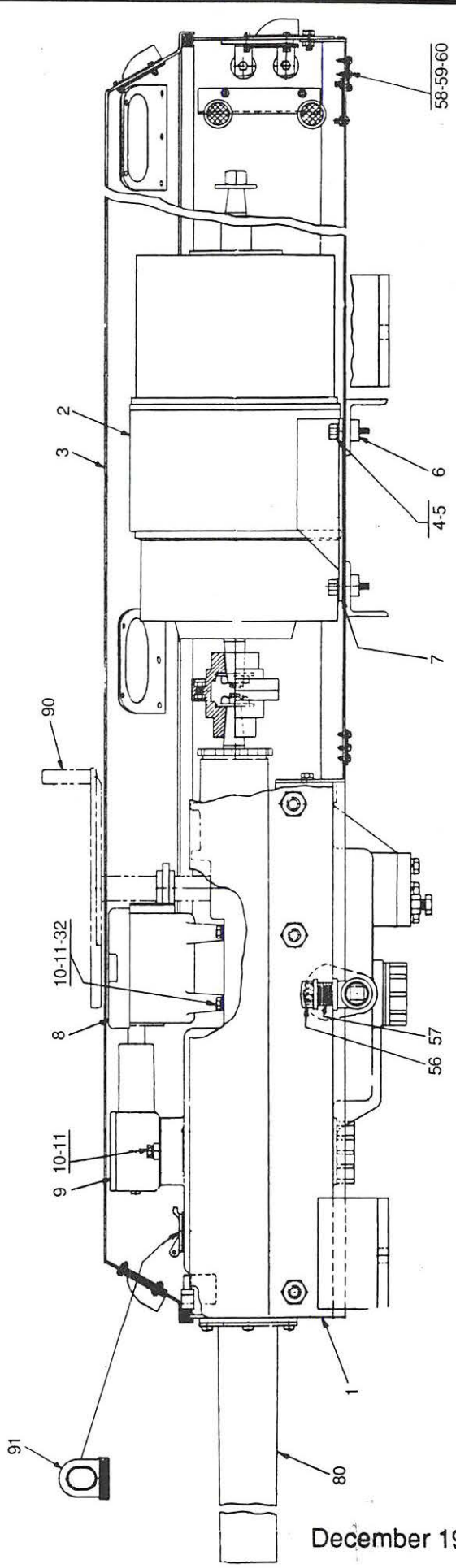
Types E1, E1H, E1HS, E160, E160XHD, Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
121	**RETAINER,** for shims, may be used instead of Ref. 8	**P71-632**
122	**NUT,** 1/2" - 13, hex., Grade B, 1 required for each Ref. 66 (Refs. 123 through 134 not used)	**P71-983**
135	**PLATE,** tie, 8" x 9" x 1 3/8" thick, for use with 132 lb. RE rail in layouts 52600-27, -30, and -35	**P71-117**
135A	Same as above except for 52600-41 layout	**P71-984**
136	**PLATE,** tie, 8" x 4' x 3/4" thick, for use with 132 lb. RE rail in layouts 52600-27, -30, -35	**P71-118**
136A	Same as above except for 52600-41 layout	**P71-985**
137	**BRACKET COMPLETE,** left-hand	**P71-616**
138	**BRACKET COMPLETE,** right-hand	**P71-617**
139	**FLANGE GUIDE,** right-hand	**P71-235**
140	**FLANGE GUIDE,** left-hand	**P71-236**
141	**BEARING,** for supports	**P71-203**
142	**TIE,** leaving end, referenced on layout drawing	
143	**BEAM COMPLETE,** see Ref. 95	
144	**PLATE,** tie	**P71-986**
145	**PLATE,** connecting, 3" x 18" x 1" thick	**P71-987**
146	**PLATE,** connecting, 3" x 47" x 1" thick	**P71-988**
147	**PLATE,** connecting, 3" x 10" x 1/2" thick	**P71-989**
148	**BOLT,** 1" - 8 x 4 1/2" long, Grade 8, 4 required for each Ref. 146	**P71-979**
149	**PLATE,** spacer	**P71-990**
150	**PLATE,** tie	**P71-991**
151	**PLATE,** spacer	**P71-992**
	(Refs. 152 through 159 not used)	
160	**PLATE,** steel	**P71-993**
161	**COLLAR,** huck, 1" dia.	**P71-994**
162	(not used)	
163	**COLLAR,** huck flanged, 1" dia.	**P71-995**
164	**SCREW,** lag, 3/4" x 6" hex. head	**P3-103**
165	**WASHER,** 1", level, 9 required for each Ref. 1 & 2,16 for each Ref. 88, 4 for each Ref. 20 & 83, 20 for each Ref. 95 & 143	**P71-997**
166	**WASHER,** slotted shim, used for Ref. 68 & 69 as required to compensate for wear	**P71-998**





Mechanisms for car retarders.

Mechanisms for Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**MECHANISM COMPLETE,** equipped with 240 volt, direct-current motor with a series type brake. Includes throw rod, Ref. 80. For use with Types E1, E1H, and E1HS retarders.	**P71-710**
A1	Same as Ref. A except cams in controller allow only positions 0, 2 or 4 and indicate only positions 0, 2 and 4 of the retarder	**P71-444**
A2	Same as Ref. A except with shunt type brake	**P71-443**
A3	**MECHANISM COMPLETE,** equipped with 240 volt, direct-current motor with a series type brake and local control switch. Includes throw rod, Ref. 80.	**P71-1101**
A4	Same as Ref. A3 except with shunt type brake	**P71-1102**
A5	Same as Ref. A3 except includes throw rod Ref. 80A. For use with Type E160XHD retarder	**P71-711**
A6	Same as Ref. A5 except with shunt type brake	**P71-1103**
1	**MECHANISM COMPLETE,** inner, for references see page 19	
2	**MOTOR COMPLETE,** for references see page 25	
3	**COVER COMPLETE,** for mechanism	**P71-1104**
4	**SCREW,** 5/8" - 11 x 1 1/4", hex. head	**P50-761**
5	**LOCKWASHER,** 5/8"	**P85-109**
6	**STRAP NUT,** 5/8" - 11	**P71-1105**
7	**SHIM,** for motor foot	**P71-704**
8	**CONTROLLER COMPLETE,** for references see page 39	
9	**GEAR CASE COMPLETE,** for references see page 21	
10	**SCREW,** 1/2" - 13 x 1 1/4", hex. head	**P50-129**
11	**LOCKWASHER,** 1/2"	**P50-101**
12	**BOARD COMPLETE,** terminal	**P71-1106**
12A	**TERMINAL,** 5/16" post	**P71-1108**
12B	**TERMINAL,** 3/8" post	**P71-221**
13	**SCREW,** 5/16" - 18 x 1 1/4", hex. head	**P85-1220**
14	**NUT,** 5/16" - 18, elastic stop hex.	**P71-705**
15	**BRACKET,** terminal board	**P71-707**
16	**SCREW,** 5/16" - 18 x 3/4", hex. head	**P71-1107**
17	**SCREW,** 3/8" - 16 x 1 1/2", hex. head	**P85-440**
18	**PIN,** 5/8" dia. x 2 7/8" long, for cover hinge	**P71-211**
19	**PIN,** cotter, 3/16" x 1 1/4"	**P91-224**
20	**SUPPORT COMPLETE,** cover	**P71-423**

Mechanisms for Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
21	**SLEEVE,** cover support	**P71-400**
22	**WASHER,** 21/32"	**P85-225**
23	**SCREW,** 1/2" - 13 x 2 1/4", hex. head	**P71-694**
24	**NUT,** 1/2" - 13, hex.	**P85-204**
25	**SPACER,** cover support	**P71-703**
26	**BUSHING,** cover support	**P71-155**
27	**WASHER,** 13/32"	**P85-221**
28	**NUT,** 3/8" - 16, brass, hex.	**P71-366**
29	**WASHER,** 17/64"	**P76-108**
30	**NUT,** no. 14-24, hex.	**P76-131**
31	**LOCKWASHER,** 3/8"	**P81-122**
32	**WASHER,** 33/64", controller shim	**P71-702**
33	**SWITCH COMPLETE,** local control, for Refs. A3, A5, & A6	**P71-793**
33A	**SWITCH ONLY**	**P71-602**
33B	**TERMINAL BLOCK**	**P71-631**
34	**SCREW,** no. 10-32 x 3/4", fil. hd., for Refs. A3, A5, & A6	**P65-208**
35	**NUT,** no. 10-32, elastic stop, hex.	**P76-333**
36	**ANGLE,** resistor mounting	**P71-1109**
37	**RESISTOR,** 1.95 ohm, 25 amp	**P71-595**
38	**SCREW,** 3/8" - 16 x 1" , hex. hd.	**P50-136**
39	**NUT,** 3/8" - 16, hex.	**P50-717**
40	**BRACKET,** resistor center tap	**P71-728**
41	**PLATE,** high voltage warning	**P71-1110**
42	**SCREW,** no. 10-32 x 1/2", pan hd.	**P50-253**
43	**RESISTOR COMPLETE,** shunt brake, for Ref. A6	**P71-397**
43A	**RESISTOR ONLY**	**P71-792**
43B	**TERMINAL BLOCK**	**P71-1112**
43C	**CONNECTOR**	**P71-1113**
43D	**CONNECTOR**	**P71-1114**
44	**CONNECTOR COMPLETE,** shunt brake, for Ref. A6	**P71-1115**
45	**NUT,** 5/16" - 18, jam, hex.	**P65-604**

Mechanisms for Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
46	**LOCKWASHER,** 5/16"	**P76-106**
47	**WASHER,** 21/64"	**P50-727**
48	**SCREW,** 5/16" - 18 x 1", hex. hd. cap	**P85-242**
49	**NAMEPLATE,** for mechanism	**P71-126**
50	**SHIELD,** for no. 14 post on terminal board	**P71-377**
51	**BUTTON,** for no. 14 post on terminal board	**P3-127**
52	**SHIELD,** for 3/8" post on terminal board	**P71-376**
53	**BUTTON,** for 3/8" post on terminal board	**P71-315**
54	**NIPPLE,** 1 1/4" x 7 1/2" long, pipe	**P71-222**
55	**TEE,** 1 1/4" x 1 1/4" x 1 1/4", pipe	**P71-108**
56	**CAP,** 1 1/4", pipe	**P71-325**
57	**NIPPLE,** 1 1/4" x 3 1/2" long, pipe	**P71-223**
58	**SCREEN,** 1 1/8" dia., vent	**P50-207**
59	**PLATE,** 1 1/8" dia., vent	**P50-206**
60	**SCREW,** no. 6-32 x 3/4", self-tapping pan hd.	**P71-692**
61	**COUPLING COMPLETE,** cable entry	**P71-371**
62	**GROUND POST**	**P5-162**
63	**PLATE,** 1 3/4" x 6", vent	**P5-411**
64	**SCREEN,** 1 3/4" x 6", vent	**P5-409**
65	**SCREW,** 1/4" - 20 x 7/8", pan hd.	**P85-1022**
66	**NUT,** 1/4" - 20, hex.	**P65-142**
67	**SCREW,** no. 6 x 3/8", drive	**P85-796**
68-79	(not used)	
80	**THROW ROD COMPLETE**	**P71-1116**
80A	**THROW ROD COMPLETE**	**P71-1117**
80B	**ROD COMPLETE,** for throw rod Ref. 80	**P71-1118**
80C	**ROD COMPLETE,** for throw rod Ref. 80A	**P71-510**
80D	**BOOT SHIELD**	**P71-1119**
80E	**BUSHING,** for boot shield	**P71-1120**
80F	**CLAMP**	**P71-1121**
80G	**NUT**	**P71-489**

Mechanisms for Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
80H	**EYE COMPLETE**	**P71-1111**
80J	**BUSHING,** replacement, for eye Ref. 80H, must be reamed after assembly	**P71-1122**
81-89	(not used)	
90	**CRANK COMPLETE,** for manual gear operation	**P71-398**
91	**SCREW,** lifting eye port for bull gear inspection	**P71-537**
	OIL, 5 gal. multipurpose gear	**P71-1123**

Memoranda

December 1987 GENERAL RAILWAY SIGNAL

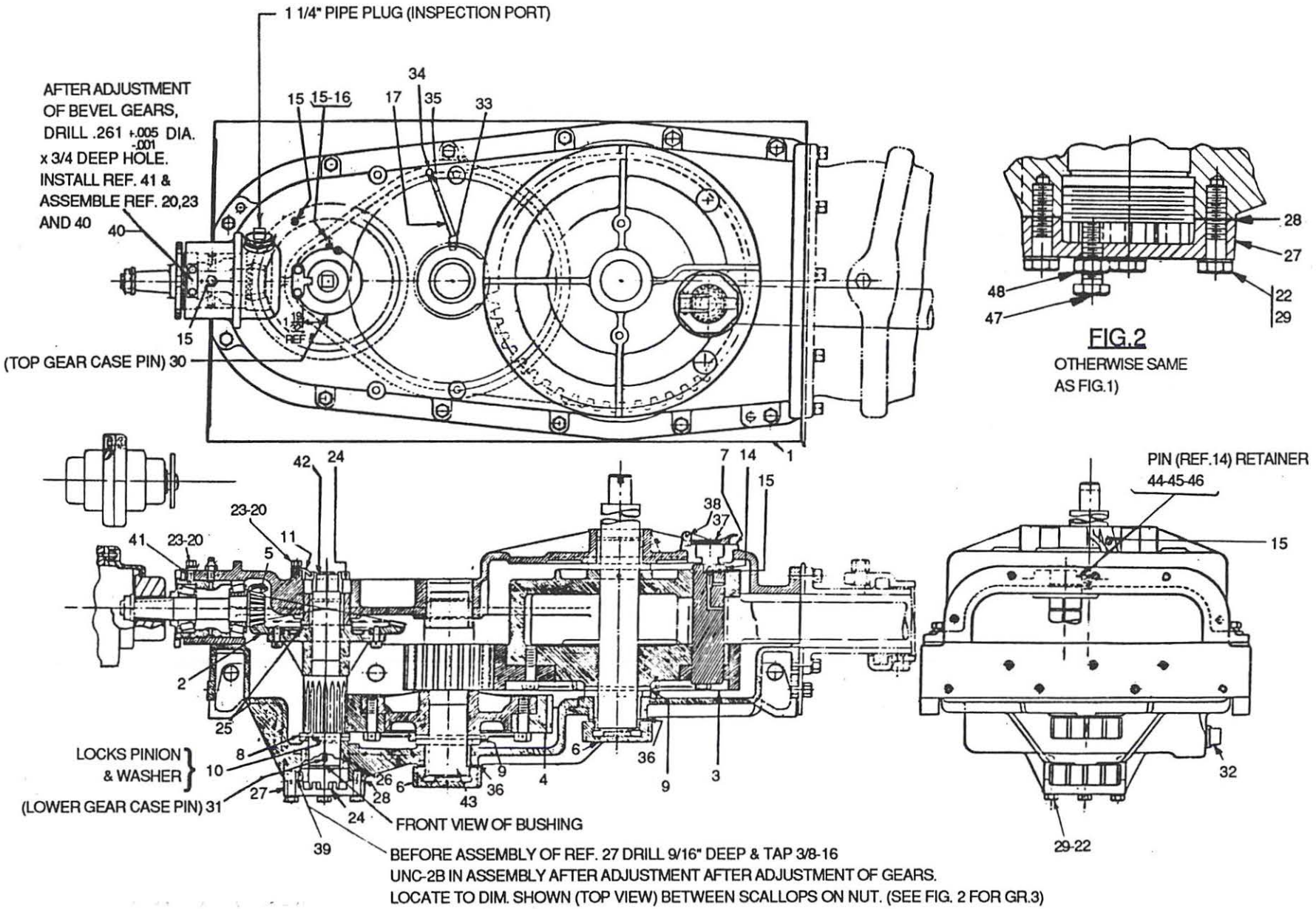

1 1/4" PIPE PLUG (INSPECTION PORT)
AFTER ADJUSTMENT OF BEVEL GEARS, DRILL .261 +.005 -.001 DIA. x 3/4 DEEP HOLE. INSTALL REF. 41 & ASSEMBLE REF. 20,23 AND 40
(TOP GEAR CASE PIN) 30
(LOWER GEAR CASE PIN) 31
LOCKS PINION & WASHER
FRONT VIEW OF BUSHING
BEFORE ASSEMBLY OF REF. 27 DRILL 9/16" DEEP & TAP 3/8-16 UNC-2B IN ASSEMBLY AFTER ADJUSTMENT AFTER ADJUSTMENT OF GEARS. LOCATE TO DIM. SHOWN (TOP VIEW) BETWEEN SCALLOPS ON NUT. (SEE FIG. 2 FOR GR.3)
PIN (REF.14) RETAINER 44-45-46

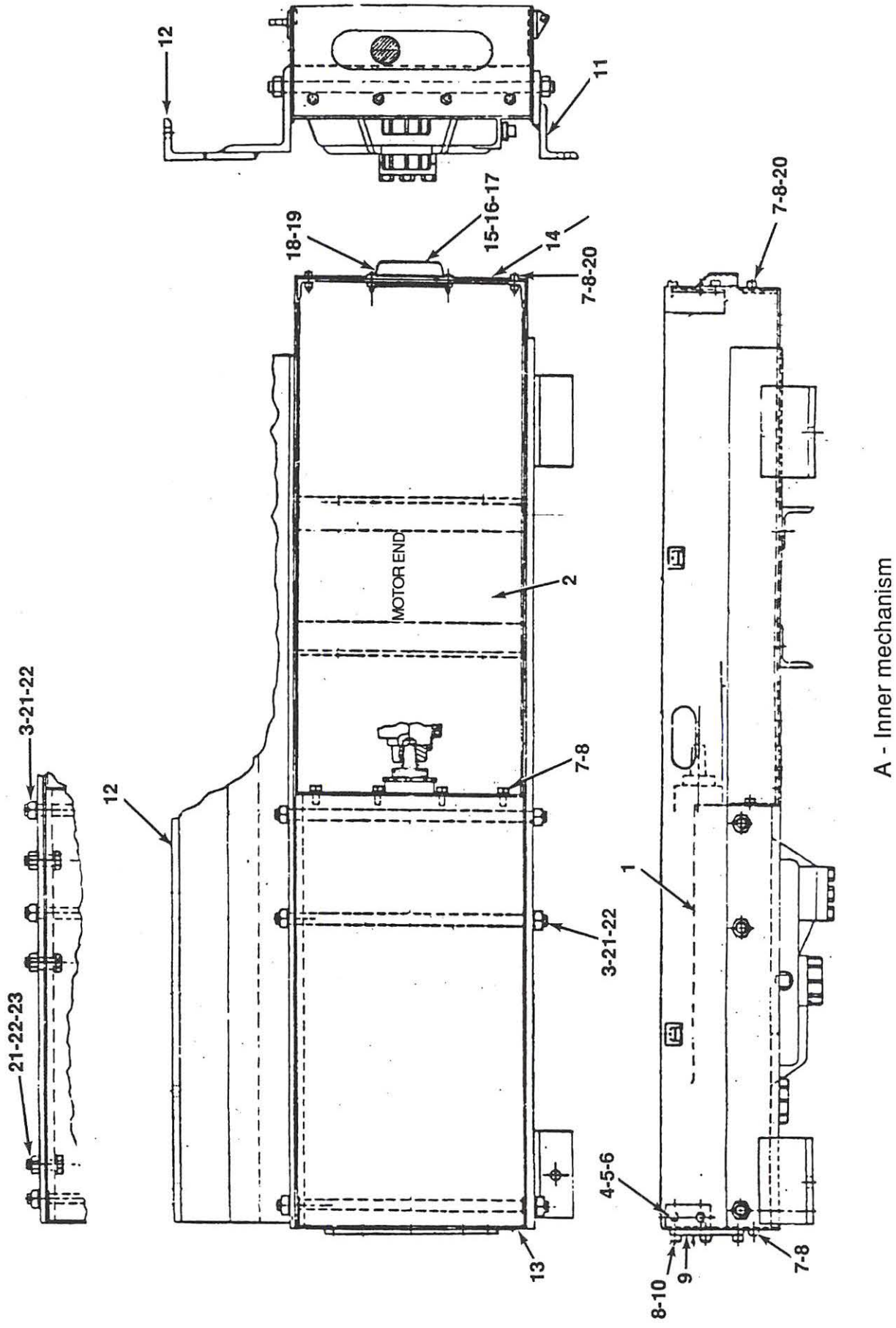
FIG.1

A - GEAR CASE COMPLETE

FIG.2

OTHERWISE SAME AS FIG.1)

Memoranda



A - Inner mechanism

Inner Mechanisms for Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**INNER MECHANISM,** less motor, 7' 9 13/16" long	**P71-1124**
A1	**MECHANISM CASE ONLY**	**P71-1125**
1	**MECHANISM GEAR CASE COMPLETE,** for references see page 21	
2	**PLATE COMPLETE,** motor mounting	**P71-1126**
3	**ROD,** 1" dia. x 26" long, threaded	**P71-308**
4	**SCREW,** 3/8" - 16 x 1", hex. cap head	**P50-136**
5	**NUT,** 3/8" - 16, hex.	**P50-717**
6	**LOCKWASHER,** 3/8"	**P81-122**
7	**SCREW,** 1/2" - 13 x 1 1/4", hex. head	**P50-129**
8	**LOCKWASHER,** 1/2"	**P50-101**
9	(not used)	
10	**SCREW,** 1/2" - 13 x 1 3/4", hex. head	**P71-180**
11-12	(not used)	
13	**PLATE COMPLETE,** for mechanism end	**P71-1127**
14	**PLATE,** for motor end	**P71-1128**
15	**HOOD,** for ventilator	**P71-285**
16	**PLATE,** for ventilator	**P5-411**
17	**SCREEN,** for ventilator	**P5-409**
18	**SCREW,** 1/4" - 20 x 7/8", pan head	**P85-1022**
19	**NUT,** 1/4 " - 20, hex.	**P65-142**
20	**NUT,** 1/2" - 13, hex.	**P85-204**
21	**NUT,** 1" - 8	**P3-105**
22	**LOCKWASHER,** 1"	**P91-338**
23	**BOLT,** 1" - 8 x 3", hex. head	**P71-429**

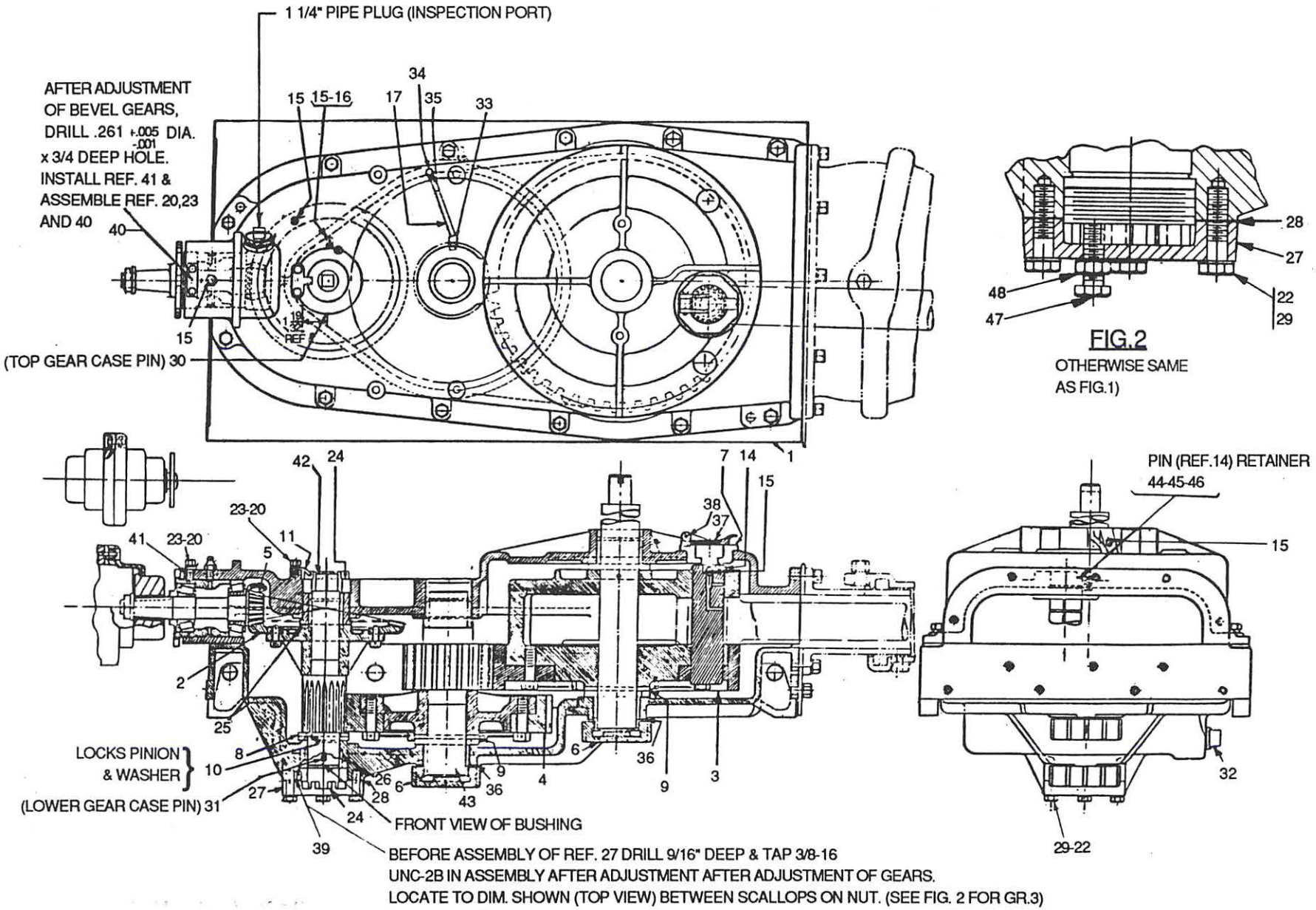

1 1/4" PIPE PLUG (INSPECTION PORT)
AFTER ADJUSTMENT OF BEVEL GEARS, DRILL .261 +.005 -.001 DIA. x 3/4 DEEP HOLE. INSTALL REF. 41 & ASSEMBLE REF. 20,23 AND 40
(TOP GEAR CASE PIN) 30
(LOWER GEAR CASE PIN) 31
LOCKS PINION & WASHER
FRONT VIEW OF BUSHING
PIN (REF.14) RETAINER 44-45-46
BEFORE ASSEMBLY OF REF. 27 DRILL 9/16" DEEP & TAP 3/8-16 UNC-2B IN ASSEMBLY AFTER ADJUSTMENT AFTER ADJUSTMENT OF GEARS. LOCATE TO DIM. SHOWN (TOP VIEW) BETWEEN SCALLOPS ON NUT. (SEE FIG. 2 FOR GR.3)

FIG.1

A - GEAR CASE COMPLETE

FIG.2

OTHERWISE SAME AS FIG.1)

Gear Case for Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**GEAR CASE COMPLETE,** does not include motor nor controller	**P71-714**
1	**CASE COMPLETE,** less gears	**P71-503**
1A	**CASE,** top half, includes Refs. 1C, 1E, 1F, 1G, 1H, 1J, 1K, & 1L, bushings and taper pin hole to be reamed and 4 holes to be drilled in field at time of assembly	**P71-318**
1B	**CASE,** bottom half, includes Refs. 1D, 1G, 1H, & 1J, bushing and taper pin hole to be reamed in field at time of assembly	**P71-491**
1C	**BUSHING,** upper, for 2 1/2" dia. hole	**P71-193**
1D	**BUSHING,** lower, for 2 1/2" dia. hole	**P71-194**
1E	**BUSHING,** upper, for 2 1/2" dia. hole	**P71-195**
1F	**PLUG,** 2 5/8" dia.,for bushing	**P71-175**
1G	**PIN,** taper, no. 9 x 2"	**P71-151**
1H	**SCREW,** 5/8" - 11 x 1 1/2", hex. head	**P87-108**
1J	**LOCKWASHER,** 5/8"	**P85-109**
1K	**PLUG,** pipe, 1 1/4"	**P30-176**
1L	**PIN,** 1/4" x 31/32"	**P71-323**
2	**GEAR COMPLETE,** for references see page 29	
3	**GEAR COMPLETE,** for references see page 29	
4	**GEAR COMPLETE,** for references see page 29	
5	**PINION COMPLETE,** for references see page 29	
6	**CAP,** for bushing	**P71-428**
7	**NUT,** 3" - 16	**P71-406**
8	**WASHER,** 2", for pinion shaft	**P71-145**
9	**WASHER,** 2 1/2", for shaft	**P71-146**
10	**PIN,** 3/16" x 5/16"	**P71-303**
11	**PLATE,** locking	**P71-542**
12-13	(not used)	
14	**PIN,** throw bar	**P71-693**
15	**OILER,** straight	**P85-378**
16	**ELBOW,** for oiler, 45 degree	**P71-401**
17	**EXTENSION,** for oiler, 4 1/4" long	**P71-533**
18-19	(not used)	
20	**SCREW,** 3/8" - 16 x 7/8", hex. head	**P71-337**

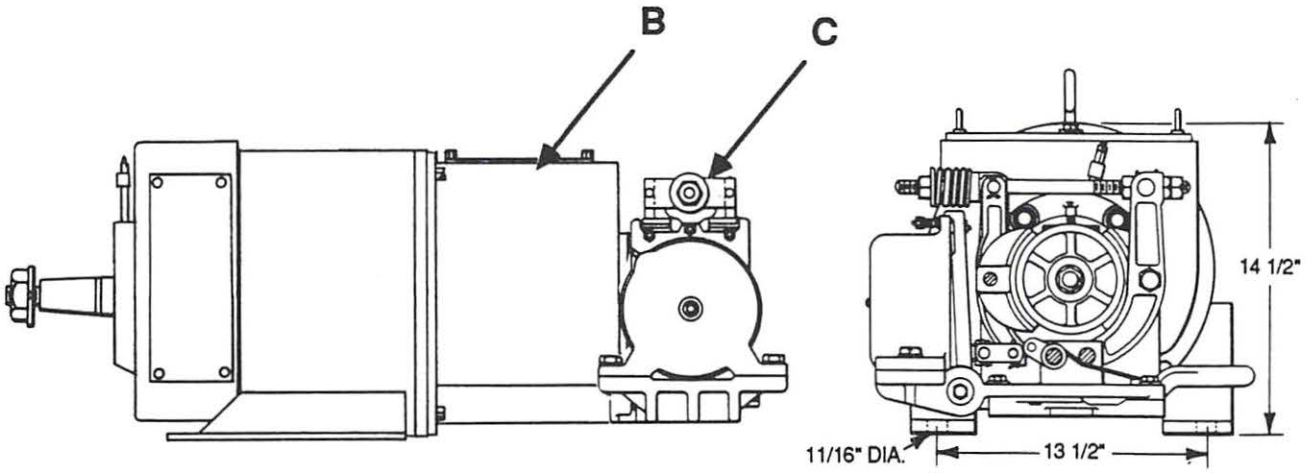
Gear Case for Car Retarders

Parts List

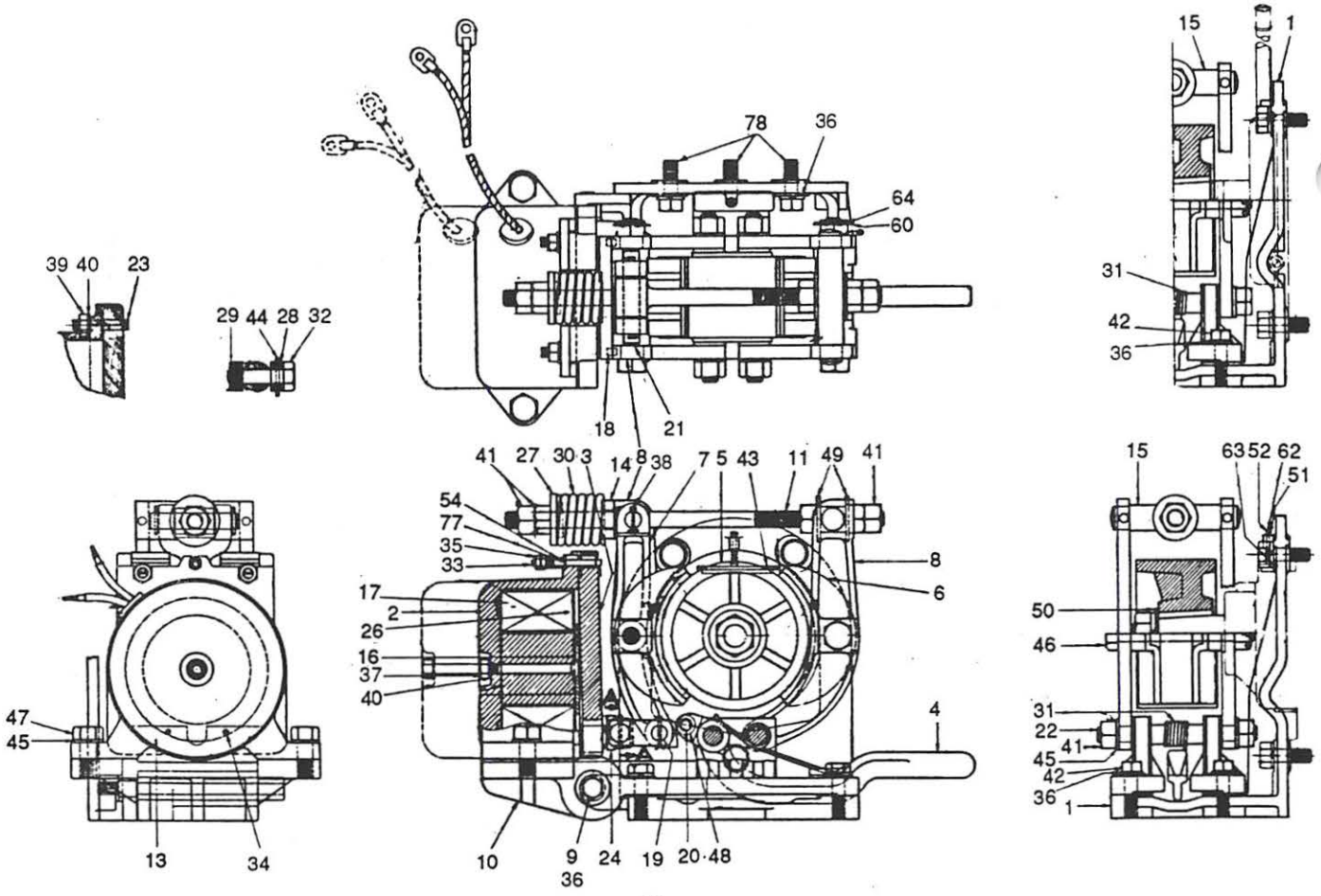
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
21	(not used)	
22	**LOCKWASHER,** 1/2"	**P50-101**
23	**LOCKWASHER,** 3/8"	**P81-122**
24	**NUT,** 3 3/16" - 12, castle	**P71-538**
25	**BUSHING COMPLETE**	**P71-642**
26	**BUSHING COMPLETE**	**P71-614**
27	**CAP**	**P71-539**
28	**GASKET**	**P71-198**
29	**SCREW,** 1/2" - 13 x 1 3/4", hex. head	**P71-180**
30	**PIN,** 1/4" x 31/32"	**P71-323**
31	**PIN,** 1/4" x 1 1/4"	**P50-416**
32	**PIPE PLUG,** 1 1/4"	**P30-176**
33	**ELBOW,** 20 degree	**P71-402**
34	**OILER,** 67 1/2 degree	**P50-753**
35	**WASHER,** 9/16"	**P71-375**
36	**GASKET,** for cap Ref. 6	**P71-408**
37	**COVER,** for nut Ref. 7	**P71-403**
38	**COTTER PIN,** 3/16" X 1 3/4"	**P91-225**
39	(not used)	
40	**PLATE,** locking	**P71-543**
41	**SET SCREW,** 3/8" - 16 X 3/4"	**P71-239**
42	**PINION,** bevel gear	**P71-527**
43	**PINION,** intermediate gear	**P71-528**
44	**WASHER,** 9/16"	**P71-1129**
45	**LOCKWASHER,** 1/2"	**P50-101**
46	**SCREW,** 1/2" - 13 x 1 1/2", socket head	**P71-1130**
47	**BOLT,** 1/2" - 13 x 1 1/2", hex. head	**P71-1131**
48	**NUT,** 1/2" - 13, hex.	**P73-356**

Memoranda



A



C

Motors and brakes for mechanisms.

Motors and Brakes for Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**MOTOR COMPLETE,** 240 volt d-c, series type with B327ATY frame, brake mechanism with industrial friction type brake, for mechanisms A, A1, A3 & A5 on page13.	**P71-1132**
A1	Same as A except shunt type, for Ref. A6 on page 13.	**P71-1133**
B	**MOTOR ONLY**	**P71-1134**
C	**BRAKE COMPLETE,** series type	**P71-618**
C1	**BRAKE COMPLETE,** shunt type	**P71-619**
1	**FRAME,** adapter, for fastening brake to motor	**P71-620**
2	**CASE COMPLETE,** for brake Ref. C	**P71-227**
2A	**CASE COMPLETE,** for brake Ref. C1	**P71-228**
3	**ARMATURE,** for brake	**P71-621**
4	**LEVER,** for hand release	**P71-622**
5	**BRAKE WHEEL**	**P71-623**
6	**BRAKE SHOE COMPLETE**	**P71-284**
6A	**BRAKE SHOE COMPLETE,** relined	**P71-1135**
7	**LEVER,** for operating brake shoe	**P71-624**
8	**LEVER,** for supporting brake shoe	**P71-625**
9	**SCREW,** 1/2" - 13	**P71-630**
10	**BASE PLATE**	**P71-626**
11	**BRAKE ROD**	**P71-627**
12-13	(not used)	
14	**STRAP**	**P71-628**
15	**TRUNNION**	**P71-629**
16-17	(not used)	
18	**STUD**	**P71-131**
19	**PIN,** link	**P71-135**
20	**PIN,** roller	**P71-133**
21	**PIN,** bearing, for brake rod	**P71-134**
22	**PIN,** bearing, for brake lever	**P71-137**
23	**STUD**	**P71-164**
24	**STUD**	**P71-165**
25-26	(not used)	
27	**WASHER**	**P71-138**

Motors and Brakes for Car Retarders

Parts List

Order by catalog number and name shown in bold type

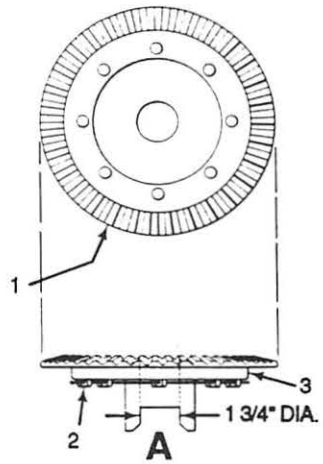
REF.	NAME	CATALOG NUMBER
28	**LINK**	**P71-347**
29	**LINK**	**P71-348**
30	**SPRING,** for brake	**P71-162**
31	**SPRING,** torsion, for hand release	**P71-169**
32	**SCREW,** 1/2" - 13 hex. hd.	**P71-548**
33	**BOLT,** 1/4" - 20 tee hd.	**P71-128**
34	(not used)	
35	**NUT,** 1/4" - 20 hex.	**P85-11**
36	**WASHER,** 1/2" lock	**P50-101**
37	(not used)	
38	**PIN,** 1/8" x 1" cotter	**P81-101**
39	**NUT,** 3/8" - 16 hex.	**P81-127**
40	**WASHER,** 3/8" lock	**P81-122**
41	**NUT,** 5/8" - 11 hex.	**P71-149**
42	**SCREW,** 1/2" - 13 x 1 3/4" hex. hd.	**P71-180**
43	(not used)	
44	**PIN,** 3/32" x 1 1/4" cotter	**P85-1013**
45	**WASHER,** 5/8" lock	**P85-109**
46	**SCREW,** 5/8" - 11 x 5 3/8" hex. hd.	**P71-174**
47	**SCREW,** 5/8" - 11 x 1 3/4" hex. hd.	**P50-730**
48	**ROLLER,** for hand release lever	**P71-365**
49	**WASHER,** 11/16"	**P26-106**
50	**WASHER,** 1 1/16"	**P3-102**
51-53	(not used)	
54	**SPRING,**	**P71-286**
55-59	(not used)	
60	**PIN,** 3/16" x 1 1/2" cotter	**P85-971**
61-63	(not used)	
64	**NUT,** 5/8" - 11 hex. castle	**P81-199**
65-76	(not used)	
77	**WASHER,** 17/64"	**P50-157**
78	**SCREW,** 1/2" - 13 x 1 1/4" hex. hd.	**P50-129**

Motors and Brakes for Car Retarders

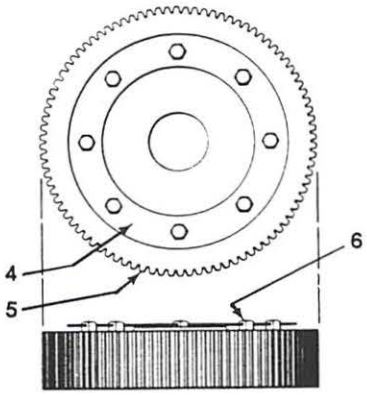
Parts List

Order by catalog number and name shown in bold type

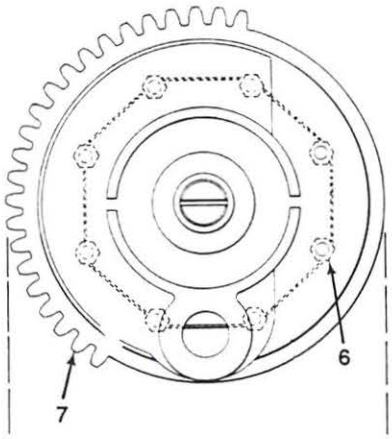
REF.	NAME	CATALOG NUMBER
NOT SHOWN	**MODIFICATION KIT,** for converting older type retarder mechanism to accept new type motor. Includes instructions, wiring diagrams, and parts.	**P71-1136**
	BRUSH, for motor	**P71-1137**
	BRUSH, for motor	**P71-1138**
	BRUSH, for motor	**P71-1139**

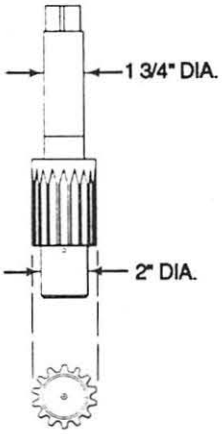

1
2
3
1 3/4" DIA.

A

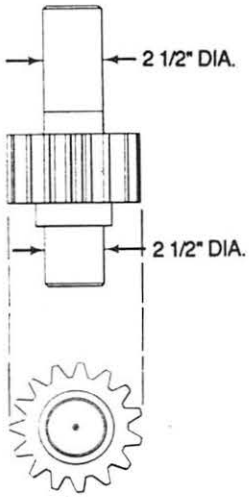

4
5
6

B

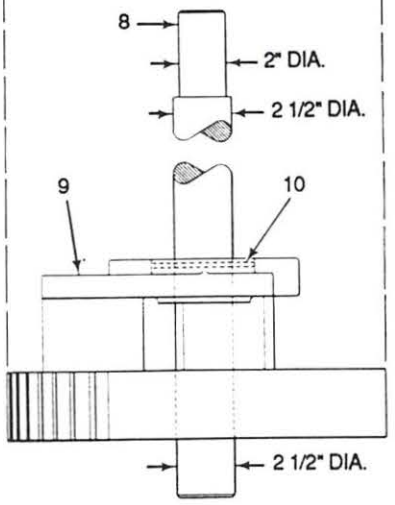

6
7


1 3/4" DIA.
2" DIA.

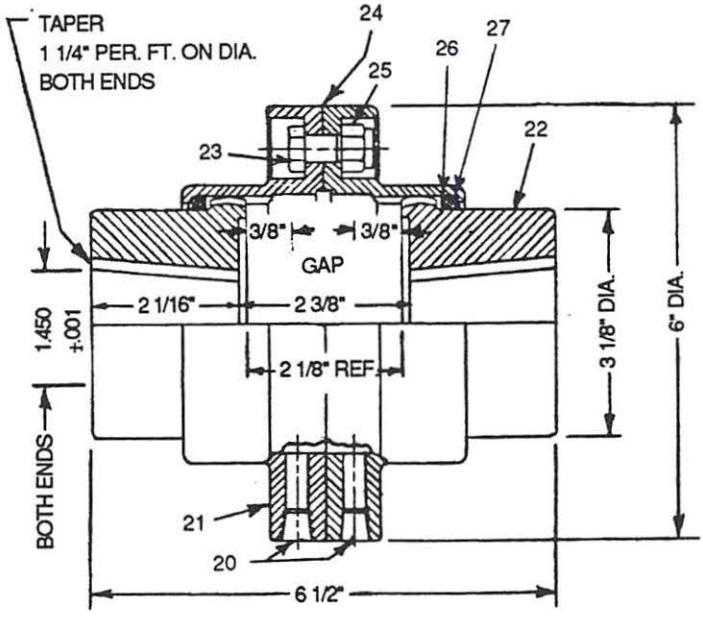
C


2 1/2" DIA.
2 1/2" DIA.

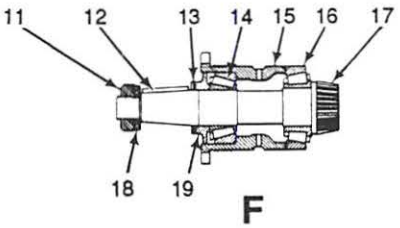
D


8
2" DIA.
2 1/2" DIA.
9
10
2 1/2" DIA.

E


TAPER
1 1/4" PER. FT. ON DIA.
BOTH ENDS
24
25
26
27
22
23
3/8"
3/8"
GAP
2 1/16"
2 3/8"
1.450 ±.001
2 1/8" REF.
3 1/8" DIA.
6" DIA.
BOTH ENDS
21
20
6 1/2"

G


11
12
13
14
15
16
17
18
19

F

Gearing for Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**GEAR COMPLETE,** bevel, has seventy 20 degree teeth	**P71-464**
B	**GEAR COMPLETE,** intermediate, has eighty 20 degree teeth	**P71-463**
C	**PINION,** has fifteen 20 degree teeth, for bevel gear	**P71-527**
D	**PINION,** has fifteen 20 degree teeth, for intermediate gear	**P71-528**
E	**GEAR COMPLETE,** has twenty-three 20 degree teeth	**P71-462**
F	**PINION COMPLETE**	**P71-509**
F1	**PINION WITH COUPLER**	**P71-1140**
G	**COUPLER COMPLETE**	**P71-448**
1	**GEAR,** only	**P71-523**
2	**SCREW,** 3/8" - 16 x 1" hex. hd., for fastening gear to hub	**P71-171**
3	**HUB,** for bevel gear	**P71-493**
4	**HUB,** for intermediate gear	**P71-495**
5	**GEAR,** only	**P71-524**
6	**SCREW,** 5/8" - 11 x 2 1/2" hex. hd., for fastening gear to hub	**P71-172**
*7	**GEAR,** only, 23 teeth	**P71-525**
8	**SHAFT,** for gear	**P71-522**
*9	**HUB,** for gear	**P71-494**
10	**PIN,** roll, for fastening hub to shaft	**P71-229**
11	**NUT,** 1" - 14 hex., for shaft	**P71-610**
12	**KEY,** for fastening hub to shaft	**P71-130**
13	**WASHER,** 1/16" thick, five required	**P71-148**
13A	As above, except .005" thick, twelve required	**P71-167**
14	**BEARING,** for hub end of shaft	**P71-197**
15	**SLEEVE,** only	**P71-541**
16	**BEARING,** for pinion end of shaft	**P71-196**
17	**PINION,** only, 20 degree teeth	**P71-526**
18	**WASHER,** lock	**P91-338**
19	**SPACER,** only	**P71-540**
20	**PIPE PLUG,** 1/8" - 27	**P71-1141**
21	**GEAR SLEEVE**	**P71-1142**
22	**HUB**	**P71-1143**

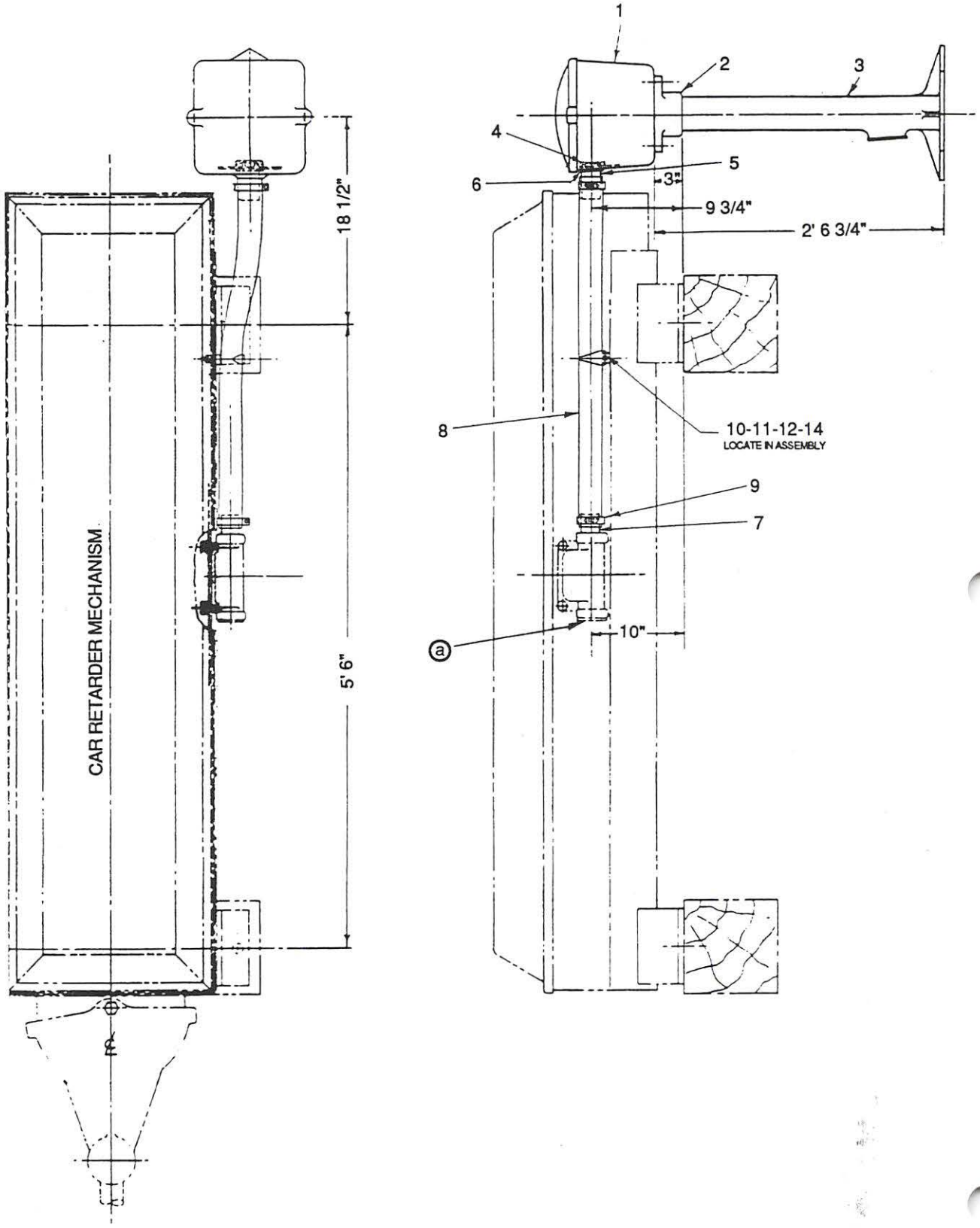
Gearing for Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
23	**BOLT,** 3/8" - 24 x 1"	**P71-1144**
24	**GASKET**	**P71-1145**
25	**NUT,** lock, 3/8" - 24	**P71-1146**
26	**RING,** retaining	**P71-1147**
27	**SEAL**	**P71-1148**

Memoranda



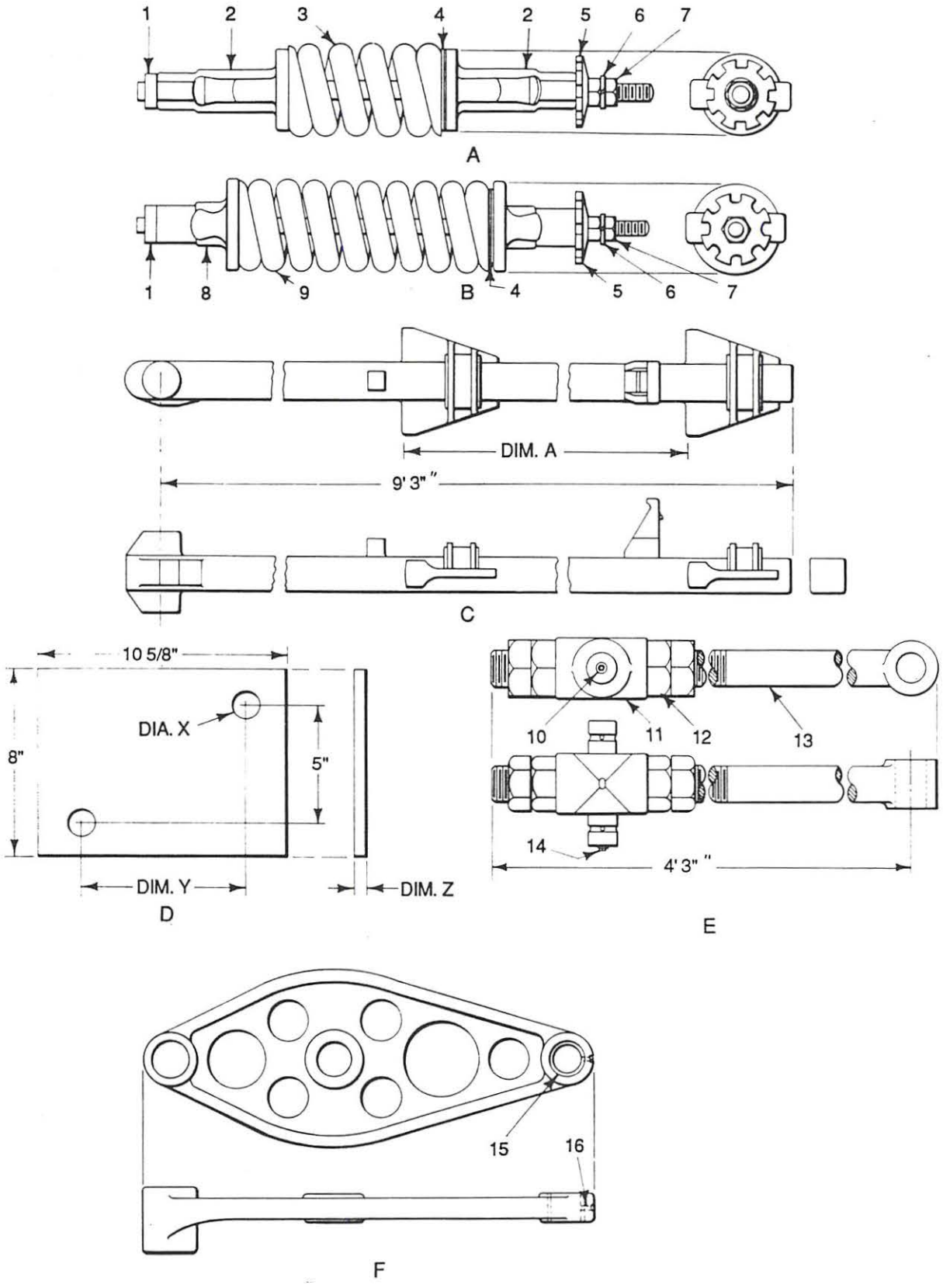
A - Junction box layout.

Junction Box for Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**JUNCTION BOX LAYOUT**	**P71-1150**
1	**JUNCTION BOX COMPLETE**	**A91-231**
2	**ADAPTER COMPLETE**	**A91-232**
3	**PEDESTAL**	**A91-233**
4	**BUSHING,** for 2" conduit	**P71-1151**
5	**NIPPLE,** pipe, 2" x 3 1/2" long	**P85-438**
6	**LOCKNUT,** for 2" conduit	**P71-1152**
7	**COUPLING,** 2" x 3 1/2" long	**P71-1153**
8	**CONDUIT,** 2" rubber hose	**A85-535**
9	**CLAMP,** hose, 2 1/2"	**P71-1154**
10	**CLAMP,** conduit, 2 1/2"	**P71-1155**
11	**SCREW,** 1/2" - 13 x 1 1/2" hex. head	**P71-173**
12	**LOCKWASHER,** 1/2"	**P50-101**
13	(not used)	
14	**NUT,** 1/2" - 13 hex.	**P85-204**



Detail parts for car retarders.

Detail Parts for Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**SPRING ROD COMPLETE,** for entering, leaving and inert sections	**P71-460**
B	**SPRING ROD COMPLETE,** for intermediate sections	**P71-457**
B1	As above, except with lighter spring, for retarders handling empty cars	**P71-458**
C	**CROSS BAR COMPLETE,** Dim. "A" =4'-11-13/32", 1 required for each intermediate beam	**P71-578**
C1	Same as C except Dim "A" = 4' - 11" and has 3/8" offset	**P71-577**

PLATE

	DIA. 'X'	DIM 'Y'	DIM 'Z'	Type of Rail	
D	1-3/16"	7"	1/2"	115 lb. R.E. and 119 lb. CF&I	**P71-288**
D1	"	"	5/8"	115 lb. R.E.	**P71-289**
D2	"	"	3/4"	119 lb. CF&I	**P71-295**
D3	"	"	7/16"	119 lb. CF&I	**P71-302**
D4	"	"	1"	105 lb. Dudley	**P71-294**
D5	"	7 5/8"	3/16"	136 & 140 lb. R.E.	**P71-297**
D6	"	"	1/4"	136 & 140 lb. R.E.	**P71-298**
D7	"	"	5/8"	131 & 132 lb. R.E.	**P71-290**
D8	"	7 7/8"	3/4"	127 lb. Dudley	**P71-291**

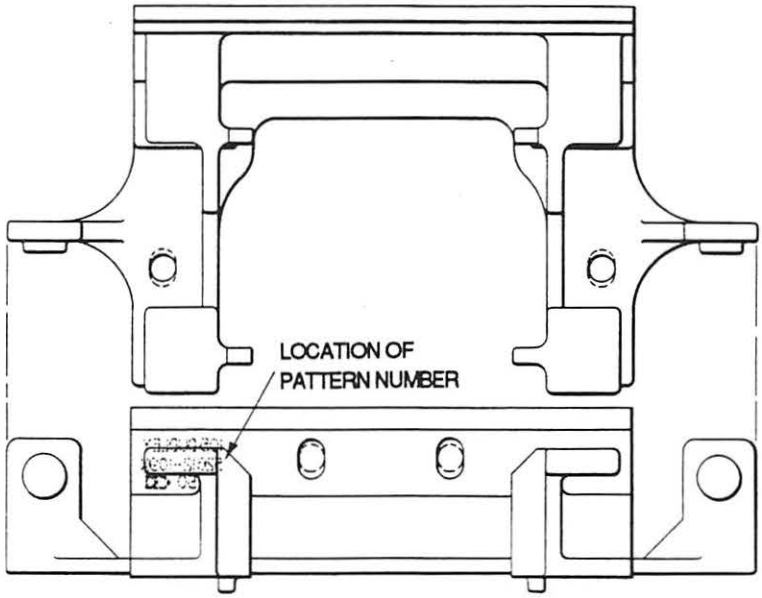
E	**ROD COMPLETE,** adjusting	**P71-582**
F	**LEVER COMPLETE,** for driving operating bar	**P71-583**
1	**ROD COMPLETE,** for spring rods Refs. A, B, and B1	**P71-459**
2	**SEAT,** spring, for spring rod Ref. A	**P71-580**
3	**SPRING,** for spring rod Ref. A	**P71-157**
4	**WASHER,** shim, .104" thick, for use between spring and seat	**P71-143**
4A	As above, except .209" thick	**P71-147**
5	**NUT,** flange	**P71-350**
6	**WASHER,** lock, for nut Ref. 5	**P71-110**
7	**NUT,** 1 1/2" - 6 hex. for rods	**P71-349**
8	**SEAT,** for spring rod Ref. B	**P71-579**
9	**SPRING,** heavy, for spring rod Ref. B	**P71-156**

Detail Parts for Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
9A	As above, except light spring for rod Ref. B1	**P71-161**
10	**OILER,** for trunnion Ref. 11	**P85-378**
11	**TRUNNION,** for rod	**P71-485**
12	**NUT,** 3" x 3 1/2" hex., for rod	**P71-490**
13	**ROD,** only	**P71-499**
14	**PIPE PLUG,** 1/8"	**P85-131**
15	**BUSHING,** for lever	**P71-184**
16	**SCREW,** drive, for bushing	**P71-534**

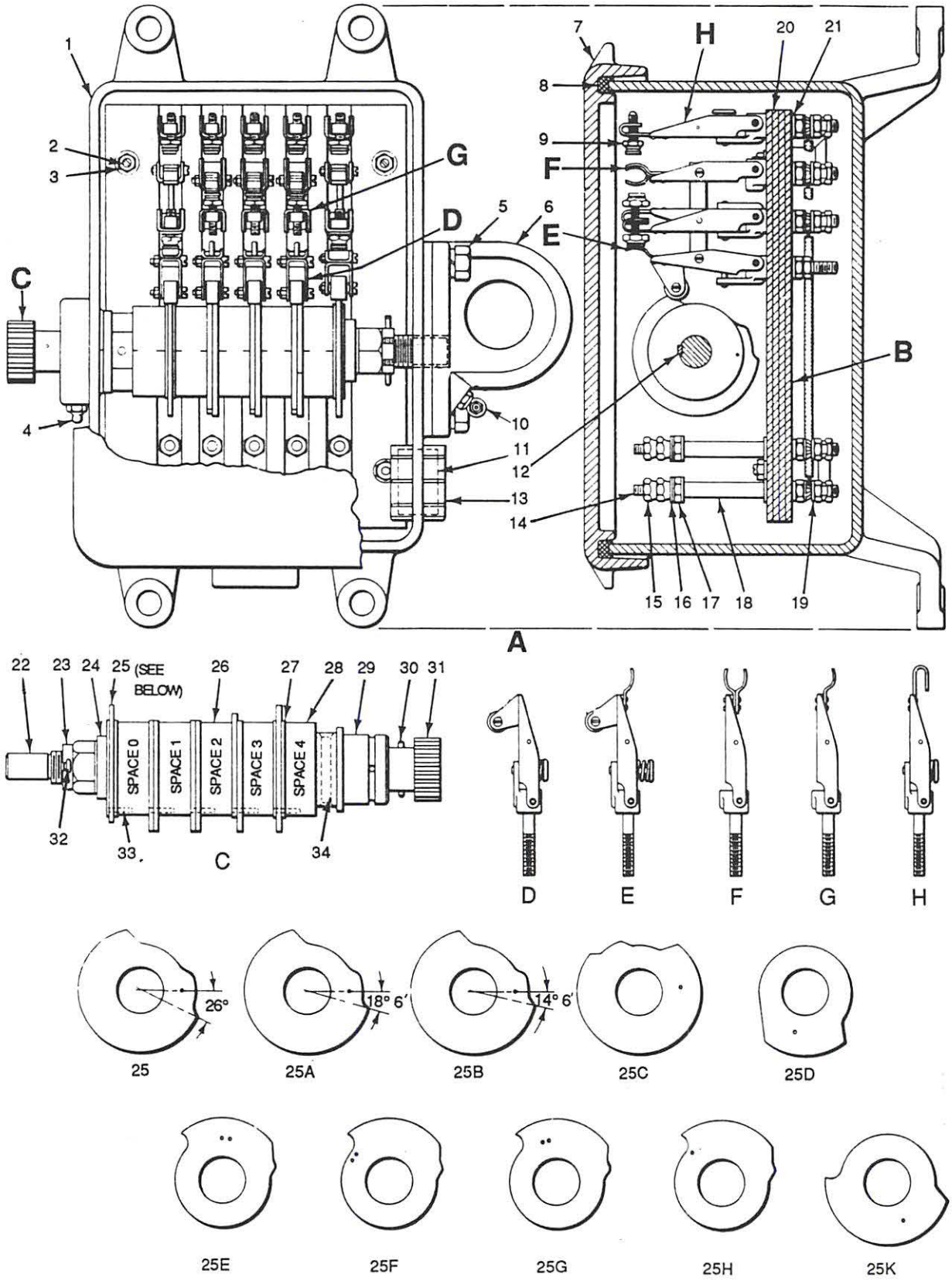


Chairs for Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF	NAME	RAIL WEIGHT	CATALOG NUMBER
17	**CHAIR,** outside	105 lb. Dudley	**P71-912**
17A	**CHAIR,** outside	112 lb. RE	**P71-913**
17B	**CHAIR,** outside	115 lb. RE	**P71-470**
17C	**CHAIR,** outside	115 lb. RE	**P71-914**
17D	**CHAIR,** outside	119 lb. CFI	**P71-476**
17E	**CHAIR,** outside	127 lb. Dudley	**P71-478**
17F	**CHAIR,** outside	130 lb. RE	**P71-915**
17G	**CHAIR,** outside	132 lb. RE	**P71-731**
17H	**CHAIR,** outside	132 lb. RE	**P71-474**
17J	**CHAIR,** outside	133 lb. RE	**P71-916**
17K	**CHAIR,** outside	136 lb. RE	**P71-480**
17L	**CHAIR,** outside	140 lb. RE	**P71-733**
18	**CHAIR,** inside	105 lb. Dudley	**P71-917**
18A	**CHAIR,** inside	112 lb. RE	**P71-918**
18B	**CHAIR,** inside	115 lb. RE	**P71-471**
18C	**CHAIR,** inside	115 lb. RE	**P71-919**
18D	**CHAIR,** inside	119 lb. CFI	**P71-477**
18E	**CHAIR,** inside	127 lb. Dudley	**P71-479**
18F	**CHAIR,** inside	130 lb. RE	**P71-920**
18G	**CHAIR,** inside	132 lb. RE	**P71-732**
18H	**CHAIR,** inside	132 lb. RE	**P71-473**
18J	**CHAIR,** inside	133 lb. RE	**P71-921**
18K	**CHAIR,** inside	136 lb. RE	**P71-481**
18L	CHAIR, inside	140lbs RE	**P71-734**



Master circuit controllers.

Master Circuit Controllers

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**CONTROLLER COMPLETE,** for Types E1, E1H, and E1HS retarders	**P71-1156**
A1	Same as Ref. A except cam only allows positions 0, 2, and 4 and only indicates those positions	**P71-1157**
A2	**CONTROLLER COMPLETE,** for Type E160 retarders	**P71-1158**
A3	**CONTROLLER COMPLETE,** for Type E160XHD retarders	**P71-1159**
A4	**CONTROLLER COMPLETE,** replacement for older styles mechanisms, Types E1, E1H, and E1HS	**P71-465**
A5	Same as Ref. A4 except only allows positions 0, 2, and 4 and only indicates those positions	**P71-466**
A6	**CONTROLLER COMPLETE,** replacement for older style Type E160 mechanisms	**P71-467**
B	**BOARD COMPLETE,** terminal, for Refs. A, A2, A3, A4, & A6	**P71-425**
B1	**BOARD COMPLETE,** terminal, for Refs. A1 & A5	**P71-426**
C	**SHAFT COMPLETE,** cam, for Refs. A & A4	**P71-504**
C1	**SHAFT COMPLETE,** cam, for Refs. A1 & A5	**P71-505**
C2	**SHAFT COMPLETE,** cam, for Refs. A2 & A6	**P71-506**
C3	**SHAFT COMPLETE,** cam, for Ref. 3	**P71-1160**
D	**FINGER COMPLETE,** with steel roller	**P71-389**
E	**FINGER COMPLETE,** with insulated roller	**P71-390**
F	**FINGER COMPLETE**	**P71-388**
G	**FINGER COMPLETE**	**P71-391**
H	**FINGER COMPLETE**	**P71-387**
1	**CASE,** only	**P71-501**
2	**STUD,** for mounting terminal board	**P71-242**
3	**NUT,** for stud	**P62-333**
3A	**WASHER,** for above	**P76-108**
4	**OILER,** for shaft	**P85-378**
5	**BOLT,** for mounting bearing	**P71-107**
5A	**WASHER,** lock, for above	**P81-122**
6	**BEARING COMPLETE,** includes bushing	**P71-500**
7	**COVER,** only	**P71-502**
8	**GASKET,** for cover, 3' -0". Specify number feet required	**P85-460**
9	**CONTACT,** only	**P71-364**

Master Circuit Controllers

Parts List

Order by catalog number and name shown in bold type

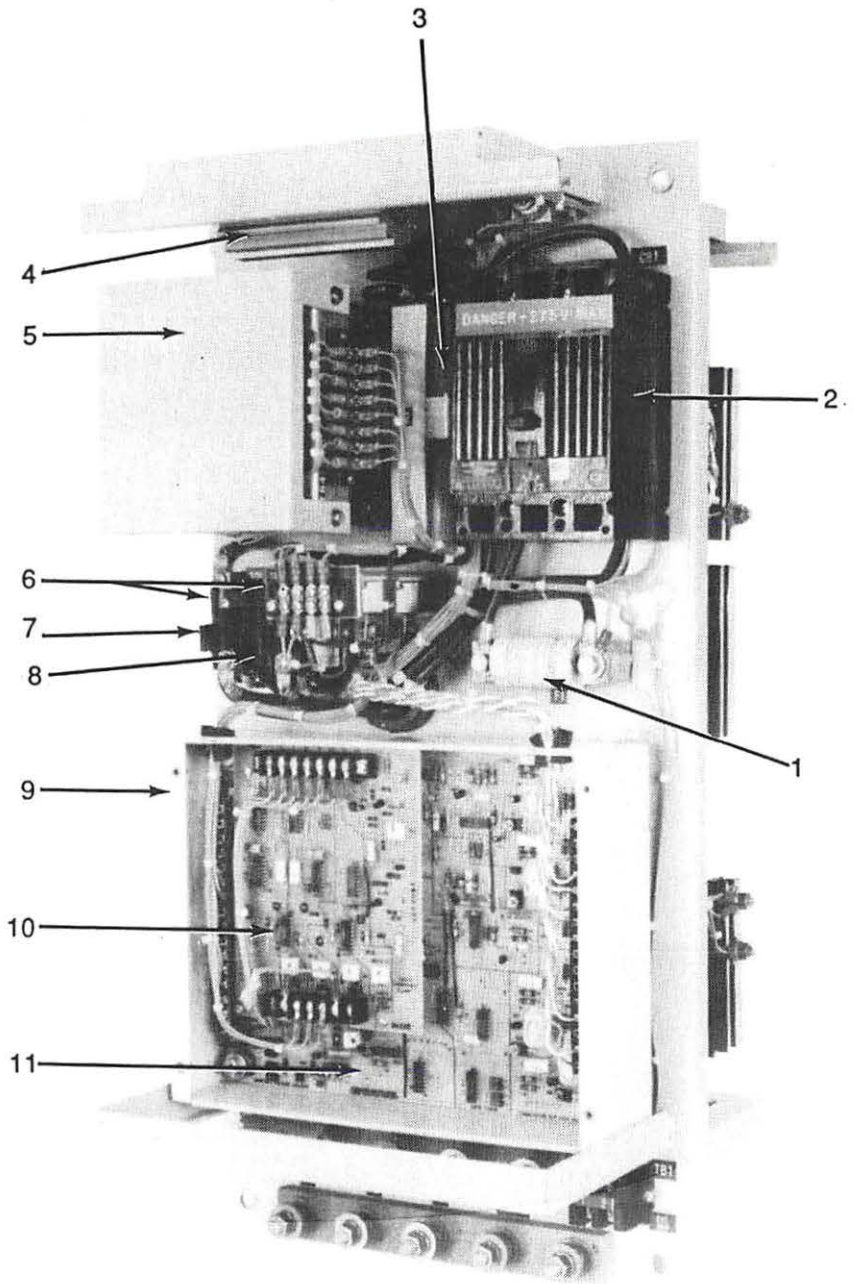
REF.	NAME	CATALOG NUMBER
10	**OILER,** for shaft	**P85-379**
11	**NIPPLE,** 1 1/4", for wire inlet	**P71-373**
12	**KEY,** for fastening collars to shaft	**P71-129**
13	**BUSHING,** 1 1/4", for nipple	**P71-306**
14	**TERMINAL POST**	**P71-385**
15	**NUT,** hex, for terminal posts	**P76-131**
16	**WASHER,** for terminal posts	**P76-108**
17	**NUT,** hex., for terminal posts	**P62-333**
18	**BUSHING,** for terminal posts	**P65-466**
19	**WASHER,** lock, for terminal posts	**P81-121**
20	**BOARD,** only , for board Ref. B	**P71-343**
20A	As above, except for board Ref. B1	**P71-338**
21	**BUS BAR,** for board Ref. B	**P71-168**
22	**SHAFT,** only	**P71-520**
23	**NUT,** for shaft	**P71-332**
24	**COLLAR,** for shaft	**P71-127**
25	**CAM,** as shown	**P71-416**
25A	**CAM,** as shown	**P71-414**
25B	**CAM,** as shown	**P71-418**
25C	**CAM,** as shown	**P71-415**
25D	**CAM,** as shown	**P71-409**
25E	**CAM,** as shown	**P71-411**
25F	**CAM,** as shown	**P71-413**
25G	**CAM,** as shown	**P71-412**
25H	**CAM,** as shown	**P71-419**
25K	**CAM,** as shown	**P71-410**
25M	**CAM,** as shown	**P71-1162**
25N	**CAM,** as shown	**P71-1163**
25P	**CAM,** as shown	**P71-1164**
25Q	**CAM,** as shown	**P71-1165**
25R	**CAM,** as shown	**P71-1166**

Master Circuit Controllers

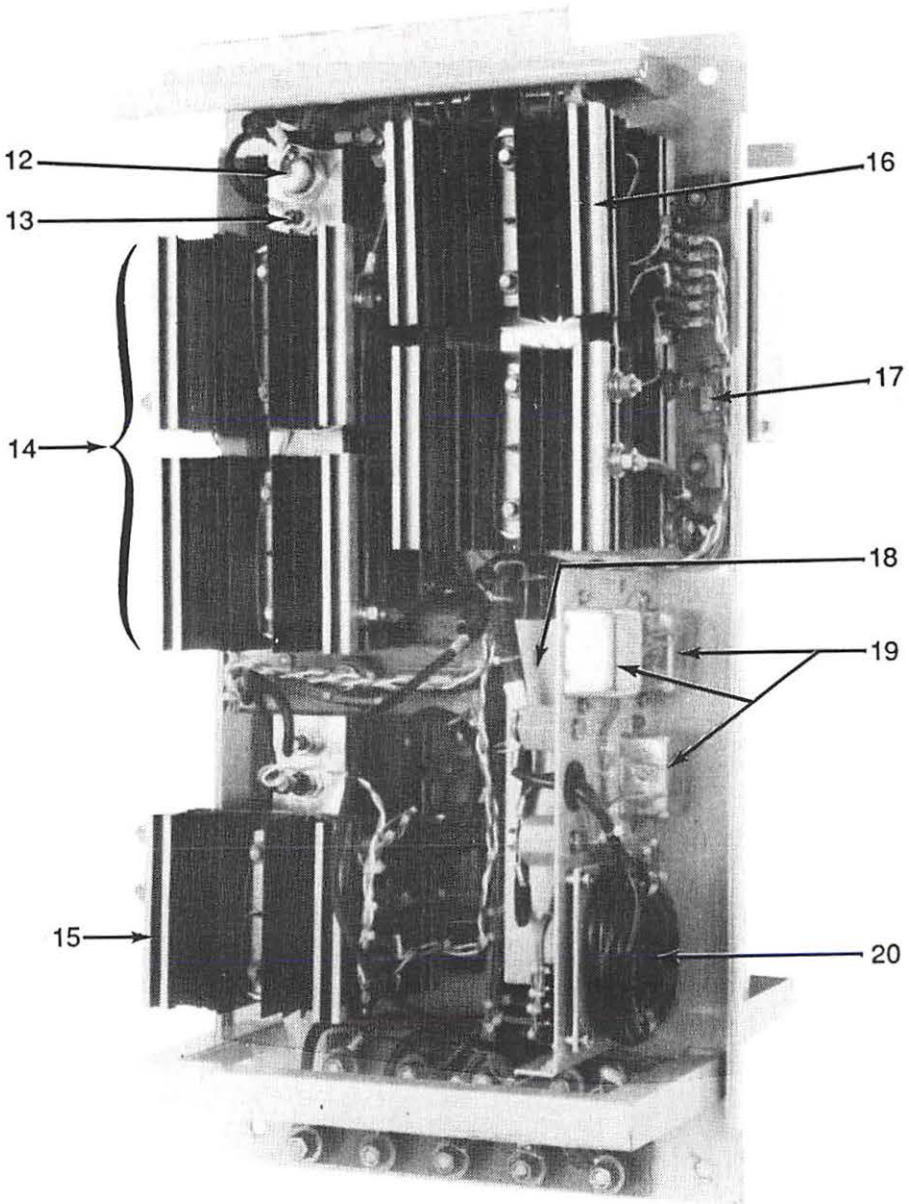
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
25S	**CAM,** as shown	**P71-1167**
25T	**CAM,** as shown	**P71-1168**
26	**COLLAR,** for shaft	**P71-190**
27	**WASHER,** spacer	**P71-144**
28	**COLLAR,** for shaft	**P71-395**
29	**BUSHING,** for shaft	**P71-192**
30	**PIN,** roll, for pinion	**P71-150**
31	**PINION,** 13 teeth, for shaft	**P71-319**
32	**PIN,** cotter, 1/8" x 1 1/2"	**P71-1169**
33	**PIN,** 1/16" x 9/16", for fastening cams to hubs	**P71-177**
34	**PIN,** 1/4" x 2", for fastening collar to shaft	**P73-113**



Front view



Rear view

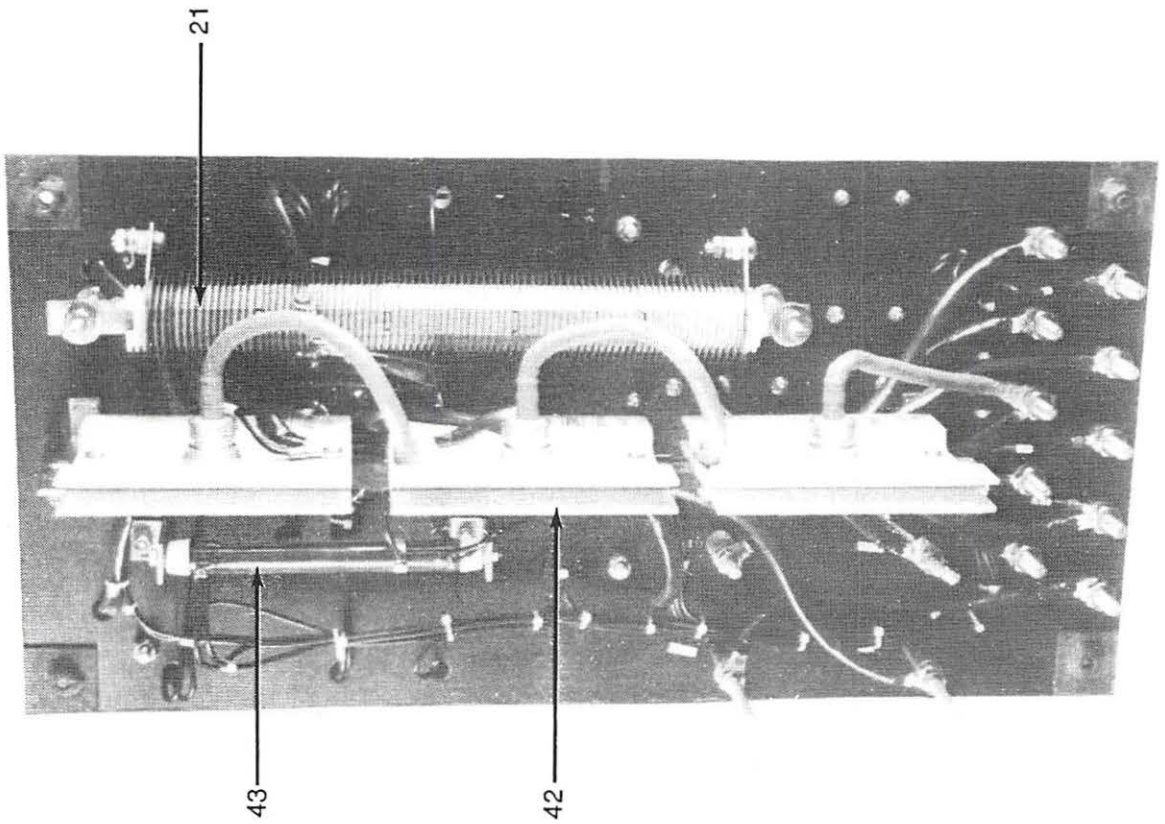
A - Solid-State Control Panel

Retarder Motor Solid-State Control Panel

Parts List

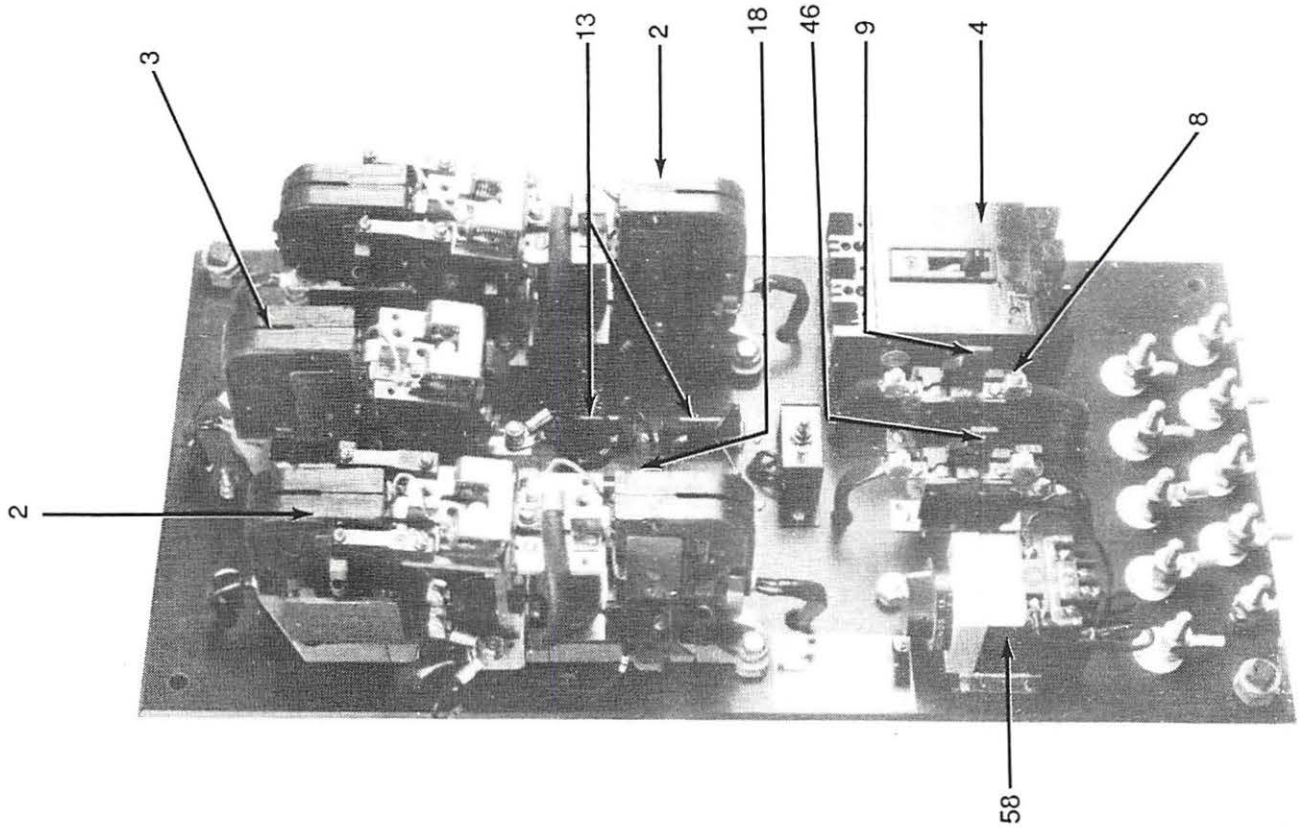
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**CONTROLLER COMPLETE,** solid state	**P71-1217**
1	**FUSE,** 500 V, 200 A	**P71-1218**
2	**CIRCUIT BREAKER**	**P71-1219**
3	**CAPACITOR,** 500 MFD, 450 V	**P71-1220**
4	**RESISTOR,** 400 ohms, 250 watt	**P71-1221**
5	**CONTROL VOLTAGE REG. ASSEMBLY**	**P71-1222**
6	**OVERLOAD RELAY,** AA11PB	**P71-1223**
7	**HEATER,** FH53	**P71-1215**
8	**HEATER,** FH50	**P71-615**
9	**CONTROL LOGIC COMPONENT ASSEMBLY**	**P71-1224**
10	**LOGIC COMPONENT ASSEMBLY BOARD**	**P71-1225**
11	**FIRING PACKAGE ASSEMBLY BOARD**	**P71-1226**
12	**DIODE**	**P71-1227**
13	**RECTIFIER**	**P71-1228**
14	**POWER MODULE,** SCR1 & 2	**P71-1229**
15	**COMMUTATING POWER SCR MODULE**	**P71-1230**
16	**POWER MODULE,** SCR3 & 4	**P71-1231**
17	**RESISTOR,** 250 ohms, 5W, 3%	**P71-1232**
18	**CAPACITOR,** 35 MFD, 440 V	**P71-1233**
19	**CAPACITOR,** 1 MFD, 1 KV	**P71-1234**
20	**CHOKE,** 10 turns #8 wire	**P71-1235**



Rear view

A - Controller Panel Complete



Front view

Controller for Mechanisms

Parts List

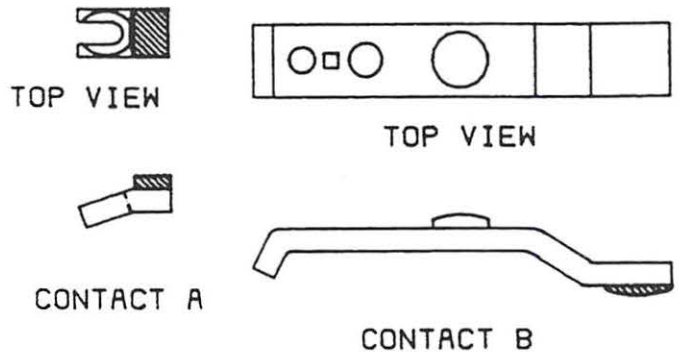
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**CONTROLLER COMPLETE,** for controlling car retarder motor with shunt-type brake	**P71-546**
A1	Same as A except for motor with series-type brake	**P71-547**
*2	**CONTACTOR COMPLETE**	**P71-596**
3	**CONTACTOR COMPLETE**	**P71-601**
4	**CIRCUIT BREAKER**	**P71-405**
8	**RELAY**	**P71-652**
9	**HEATER**	**P71-615**
13	**RESISTOR**	**P71-715**
18	**RESISTOR**	**P71-1213**
21	**RESISTOR**	**P71-595**
42	**RECTIFIER**	**P71-1214**
43	**RESISTOR**	**P71-600**
46	**HEATER**	**P71-1215**
58	**RELAY**	**P71-1216**

*Reference numbers correspond with the number used on the GRS Engineering Drawing and are not in sequence.

REPAIR KITS FOR CONTACTOR

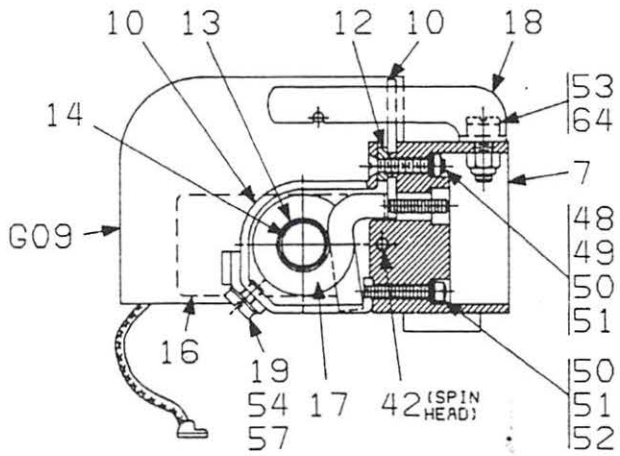
A KIT COMPLETE, repair kit for contactor. P71-1201



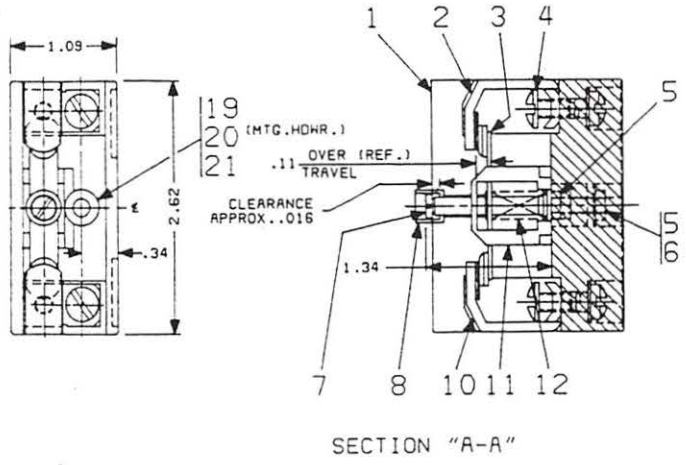
DESCRIPTION	QUANTITY
Stationary Contact	1
Moving Contact	1
Coil Spring, 25/32Lg-Wht	1
Coil Spring, 57/64Lg-Red	1
Coil Spring,37/64Lg-Blk	1
Bolt, 1/4-20 x 5/8 Hex	1
Screw, 1/4-28 x .38	2
Lockwasher 1/4 Dia.	2
Flat Washer	1
Hex Washer, Head Screw-1/4-20 x 1/2	1

B KIT COMPLETE, arc box, base, and coil for contactor. P71-1202

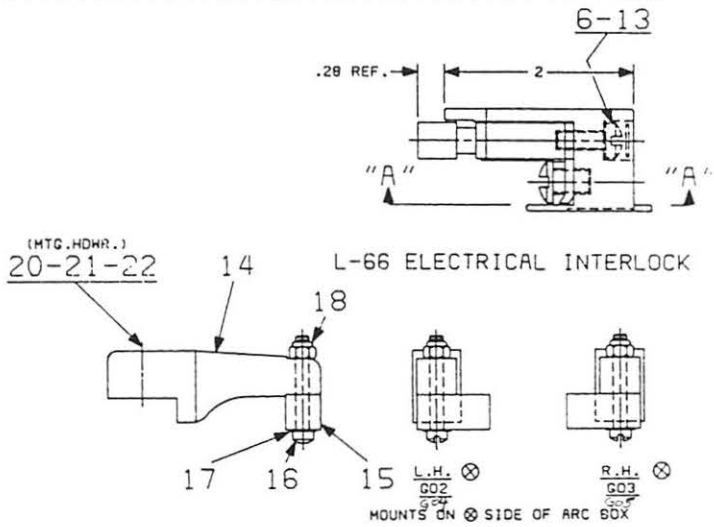
REF.	DESCRIPTION	QUANTITY
7	Base; Molded B.O. Support	1
10	Blowout Coil; 50A	1
12	Spacer; Insulating	1
13	Tube; Insulating	1
14	Core; Blowout	1
16	Polepiece; Right	2
17	Washer; Insulating	1
18	Latch; Arc box	1
19	Contact; Stationary	1
42	Rivet; Tubular, Brass	1
48	Screw; .190-32 x .88 Flat Stl.	1
49	Nut; .190-32 Sq. Stl.	1
50	Washer; .190 Lock Stl.	2
51	Washer; .190 Std. Stl.	2
52	Screw; .190-32 x 1.00 Fil. Stl.	1
53	Screw; .190-32 x .50 Fil. Stl	2
54	Screw; 1/4-28 x .38 Bndg. Stl.	1
57	Washer; 1/4 Lock Stl.	1
64	Nut; Stop	2
G09	Arc Box for 50A Contactor	1



C KIT COMPLETE, electric interlock P71-1203



SECTION "A-A"



L-66 ELECTRICAL INTERLOCK

INTERLOCK ARM ASSEMBLY

REF.	DESCRIPTION	QUANTITY
19	Screw; .190-32x 1-3/4 Fil. Hd. Stl.	1
20	Washer; .190 Lock Stl.	2
21	Washer; .190 Std. Stl.	2
22	Screw; .190-32 x 7/8 Fil. Hd. Stl.	1
	Bag	1

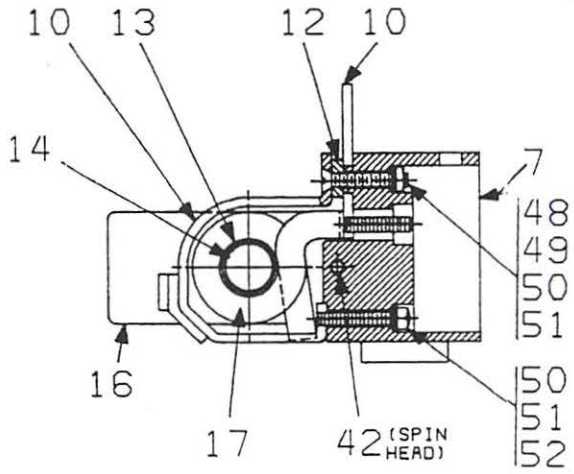
Type L-66 Electrical Interlock

1	Base; Molded	1
2	Cont/Term; Stationary	1
3	Contact; Moving	1
4	Screw; .190-32 x 3/8 B Bndg. Hd. M.S. Term.	2
5	Nut; .190-32 Hex.	2
6	Washer; .190 Lock	3
7	Shaft	1
8	Tube; Plunger	1
10	Cont/Term; Stationary	1
11	Bracket; Contact	1
12	Sprint,	1
13	Screw; .190-32 x 1/2 Fil. Hd. S.M.	2

Interlock Arm Assembly

14	Arm; Interlock	1
15	Button	1
16	Screw; .112-40 x 1 Fil. Hd. Stl. Mach.	1
17	Washer; .112 Std. Stl.	1

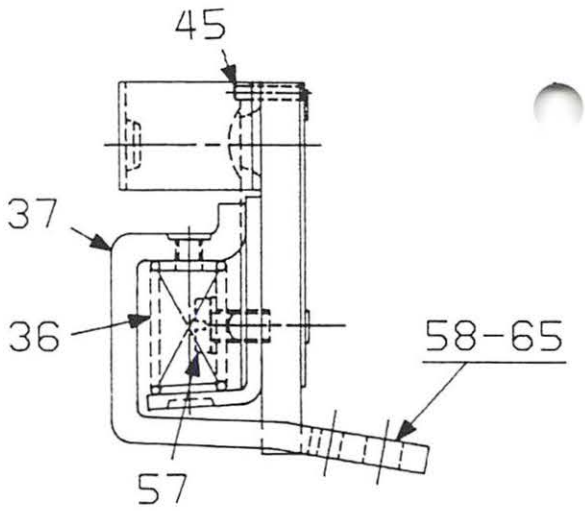
D KIT COMPLETE, blowout coil P71-1204



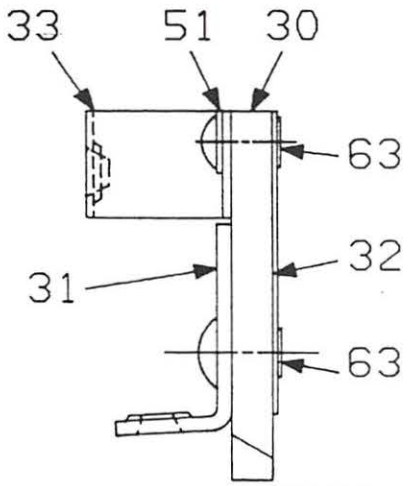
REF.	DESCRIPTION	QUANTITY
7	Base; Molded B.O. Support	1
10	Blowout Coil; 50A	1
12	Spacer; Insulating	1
13	Tube; Insulating	1
14	Core; Blowout	1
16	Polepiece; Right	2
17	Washer; Insulating	1
42	Rivet; Tubular, Brass	1
48	Screw; .190-32 x .88 Flat Stl.	1
49	Nut; .190-32 Sq. Stl.	1
50	Washer; .190 Lock Stl.	2
51	Washer; .190 Std. Stl.	2
52	Screw; .190-32 x 1.00 Fil. Stl.	1

E KIT COMPLETE, armature P71-1205

REF.	DESCRIPTION	QUANTITY
30	Armature	1
31	Support; Spring	1
32	Plate; Non-Mag	1
33	Holder; Spring	1
36	Spring; Kickout,	2
37	Stop; Armature	1
45	Pin; Roll, .125 x .38 Stl.	2
51	Washer; .190 Std. Stl.	2
57	Washer; .250 Lock Stl.	2
58	Bolt; .250-20 x .875 Hex. Stl.	2
63	Rivet; Tubular, .188 x 484	4

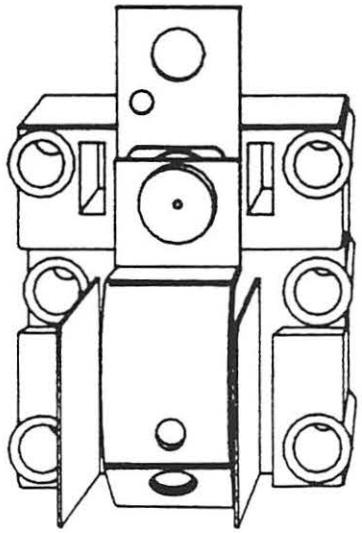


ARMATURE COMPLETE



ARMATURE SUB-ASSEMBLY

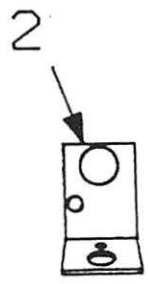
F KIT COMPLETE, connector. P71-1206

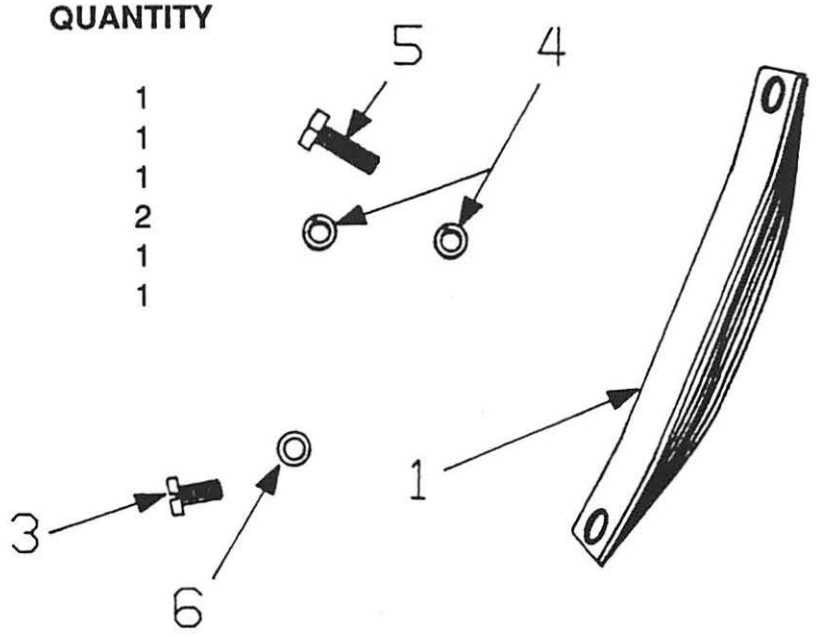


DESCRIPTION	QUANTITY
Washer; .312 Lock Stl.	4
Washer; .250 Lock Stl.	4
Connector; 10/50A .250-20	2
Connector; 100/150A .312-18	2
Stud, Rear; 10/50A .250-20 (1 Pole)	2
Stud, Rear; 100/150A .312-18 (1 Pole)	2
Stud, Rear Term; 10/50A .250-20	1
Stud, Rear Term; 100/150A .312-18	1
Nut; .250-20 Brass	8
Nut; .312-18 Brass	8
Washer; .250 Brass Flat Wide	8
Washer; .312 Brass Flat Wide	8
Stud, Rear; 10/50A .250-20 (2 Pole)	2
Stud, Rear; 100/150A .312-18 (2 Pole)	2
Nut; .312-18 Stl.	4
Nut; .250-20 Stl.	4
Washer; .250 Flat Wide Stl.	4
Washer; .312 Flat Wide Stl.	4
Screw; .190-32 x .625 Fil. Stl.	2
Carton, Shipping for Rear Conn. Kit	1
Label, Shipping for Rear Conn. Kit	1
Leaflet, Rear Conn. Stucs.	1

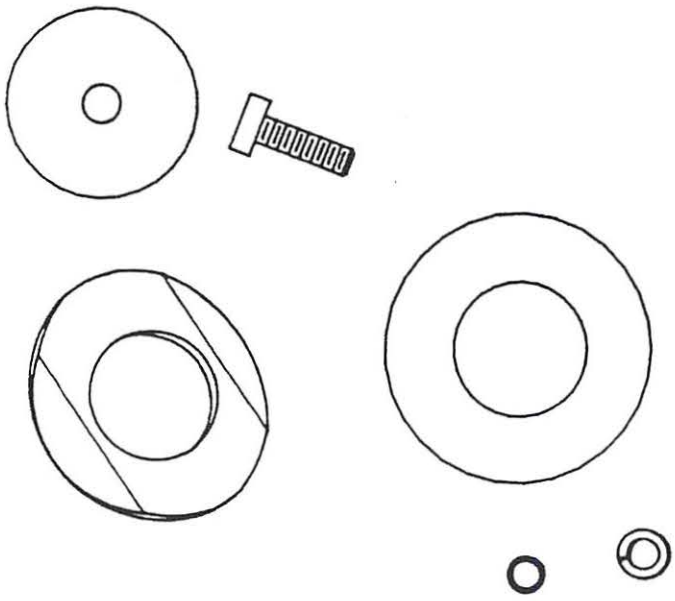
G KIT COMPLETE, shunt P71-1207

REF.	DESCRIPTION	QUANTITY
1	Shunt	1
2	Connector	1
3	Screw, .250-28 x .38 Bndg Stl.	1
4	Washer, .250 Lock Stl.	2
5	Bolt, .250-20 x .62 Hex Stl.	1
6	Washer, .250 Std. Stl.	1





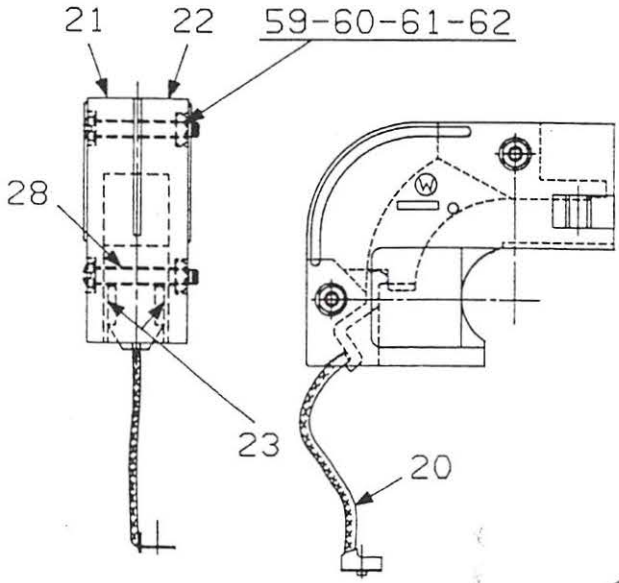
H KIT COMPLETE, coil mounting P71-1208



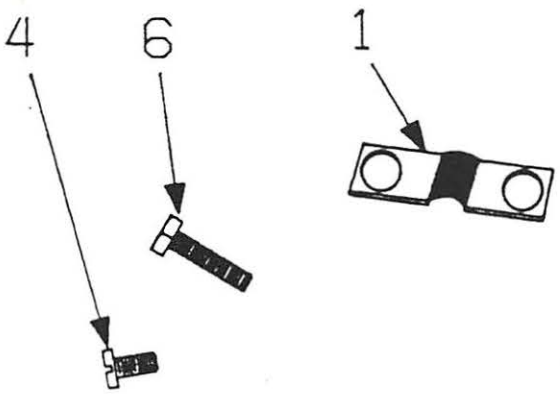
DESCRIPTION	QUANTITY
Poleface	1
Screw, Poleface	1
Washer, Retaining	1
Poleface, Lower	1
Washer, .190 Lock Stl.	1
Screw, .190-32 x .50 Fil. Hd. Stl.	1
Washer, .250 Lock Stl.	1
Washer, Lower Retaining	1

J KIT COMPLETE, arc box P71-1209

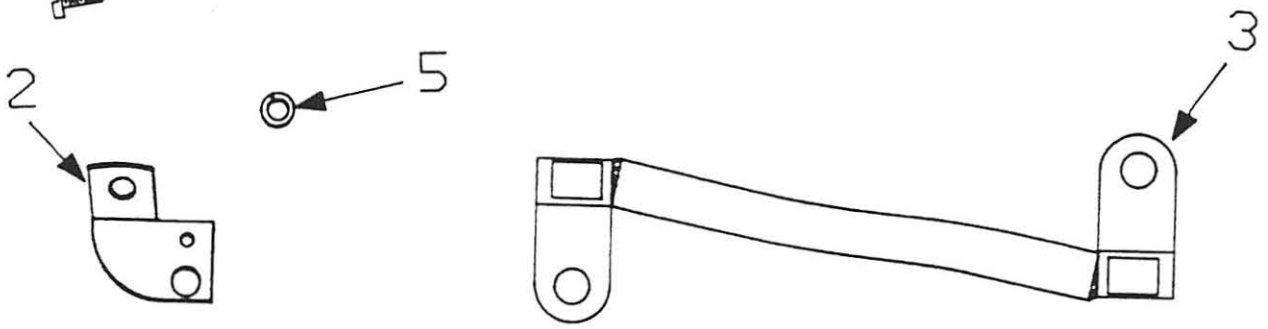
REF.	DESCRIPTION	QUANTITY
20	Archorn; 50A	1
21	Arcbox; LH 50A	1
22	Arcbox; RH 50A	1
23	Cement; .2 Oz.	1
28	Tube; Insulating	1
59	Screw; .138-32 x 1.25 Fil. Br.	2
60	Washer; .138 Std. Stl.	2
61	Washer; .138 Lock. Stl.	2
62	Nut; .138-32 Hex. Stl.	2



K KIT COMPLETE, shunt P71-1210

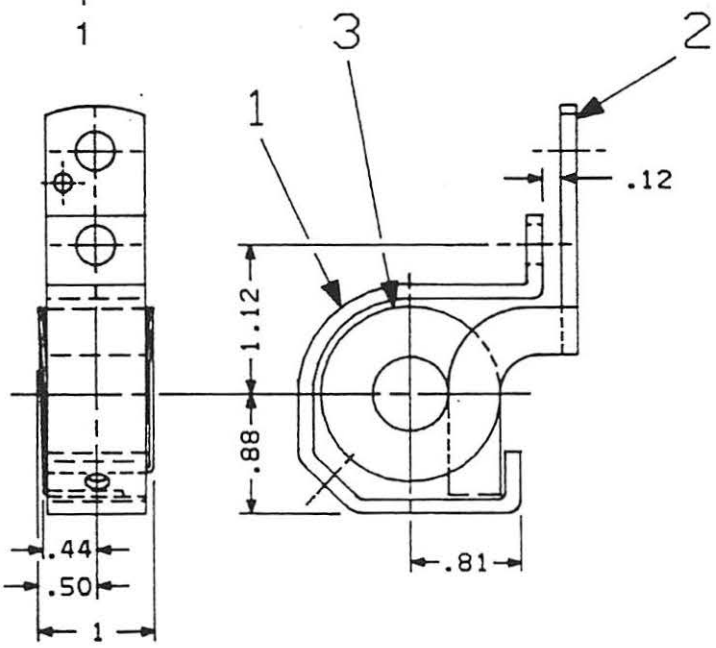


REF.	DESCRIPTION	QUANTITY
1	Shunt	1
2	Connector	1
3	Shunt, Armature	1
4	Screw, .250-28 x .38 Bndg. Stl.	2
5	Washer, .250 Lock Stl.	3
6	Bolt, .250-20 x .875 Hex Hd. Stl.	1



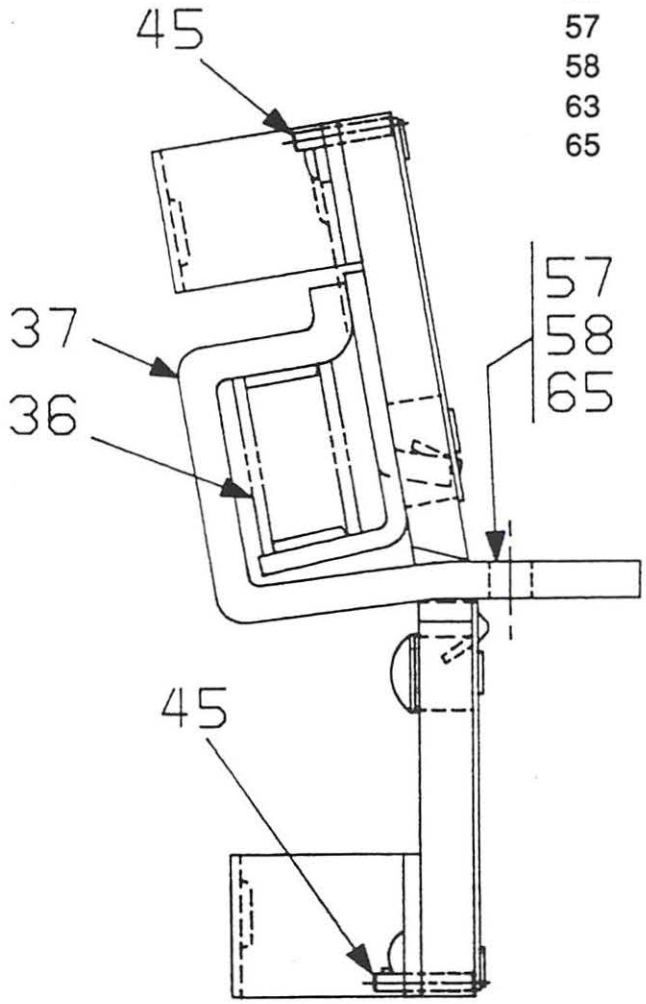
L KIT COMPLETE, 50 amp blowout coil P71-1211

REF.	DESCRIPTION	QUANTITY
1	Archorn	1
2	Terminal	1
3	Coil, 50 Amp	1

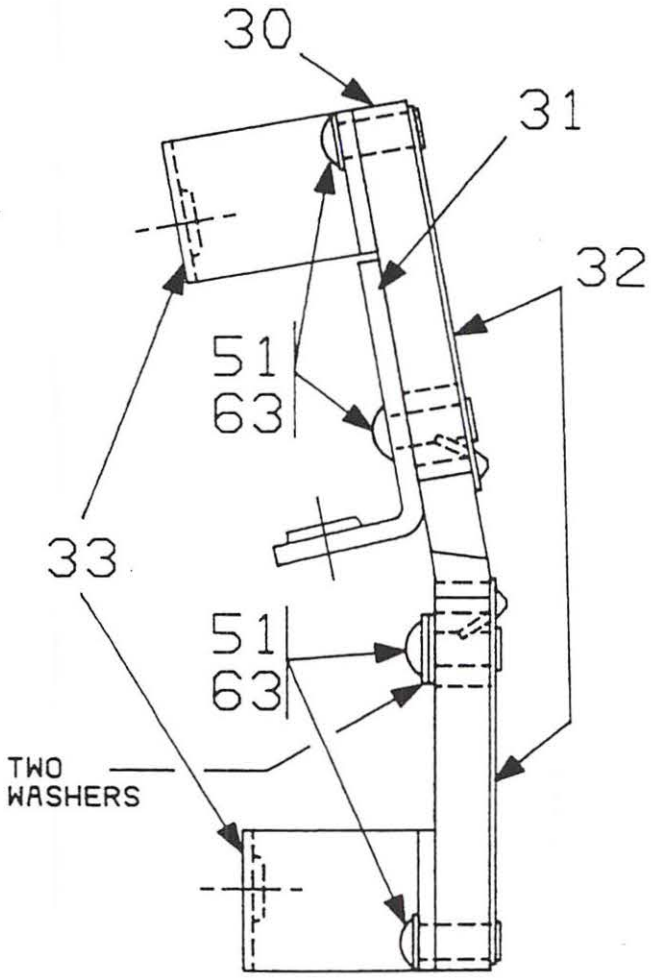


M KIT COMPLETE, armature. P71-1212

REF.	DESCRIPTION	QUANTITY
30	Armature	1
31	Support; Spring	1
32	Plate; Non-Mag	2
33	Holder; Spring	2
36	Spring; Kickout	1
37	Stop; Armature	1
45	Pin; Roll, .125 x .38 Stl.	4
51	Washer; .190 Std. Stl.	8
57	Washer; .250 Lock Stl.	2
58	Bolt; .250-20 x .875 Hex. Stl.	2
63	Rivet; Tubular, .188 x 484	8
65	Washer; .250 Std. Stl.	2

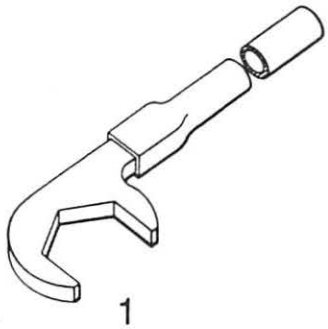


ARM COMPLETE



ARM SUB-ASSEM

Memoranda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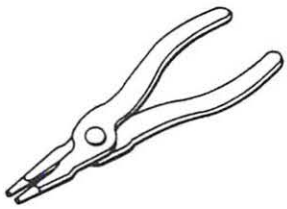
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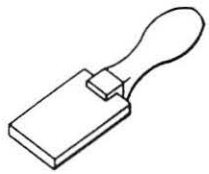
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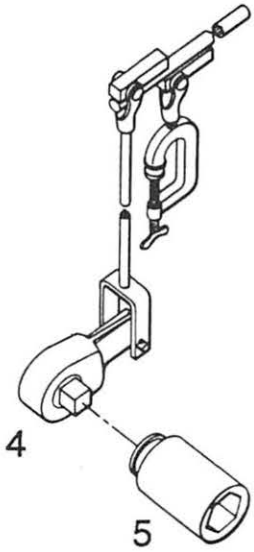
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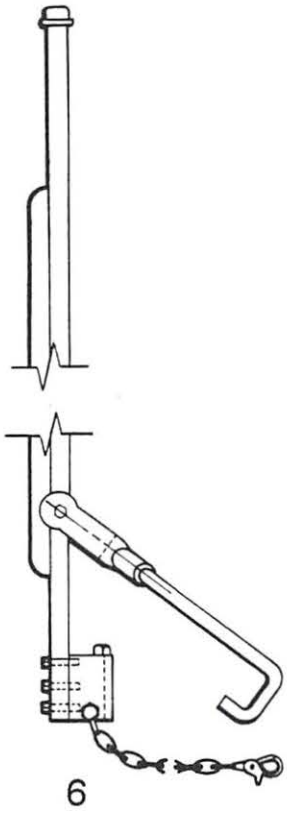
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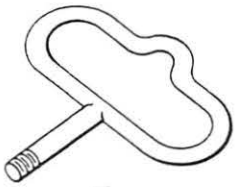
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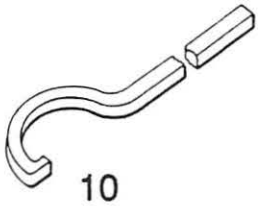
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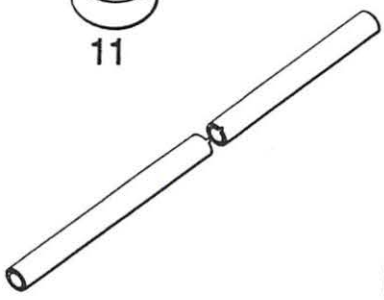
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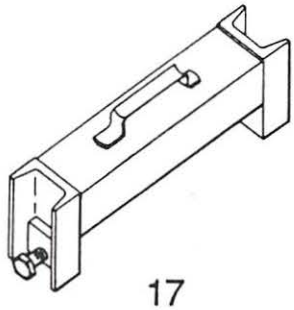
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Tools for car retarders.

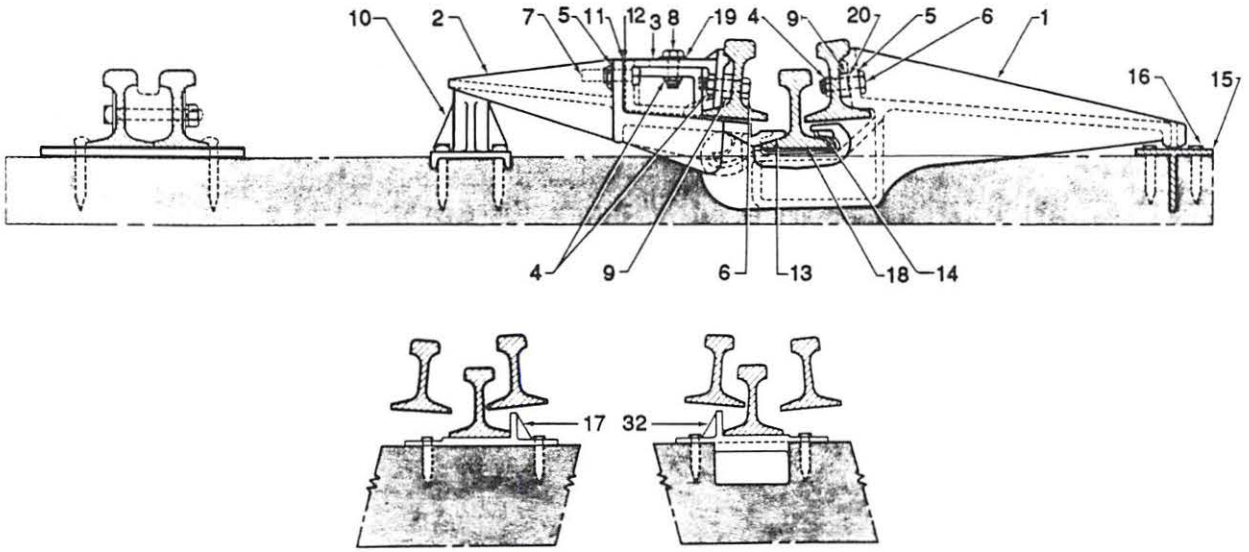
Tools for Car Retarders

Parts List

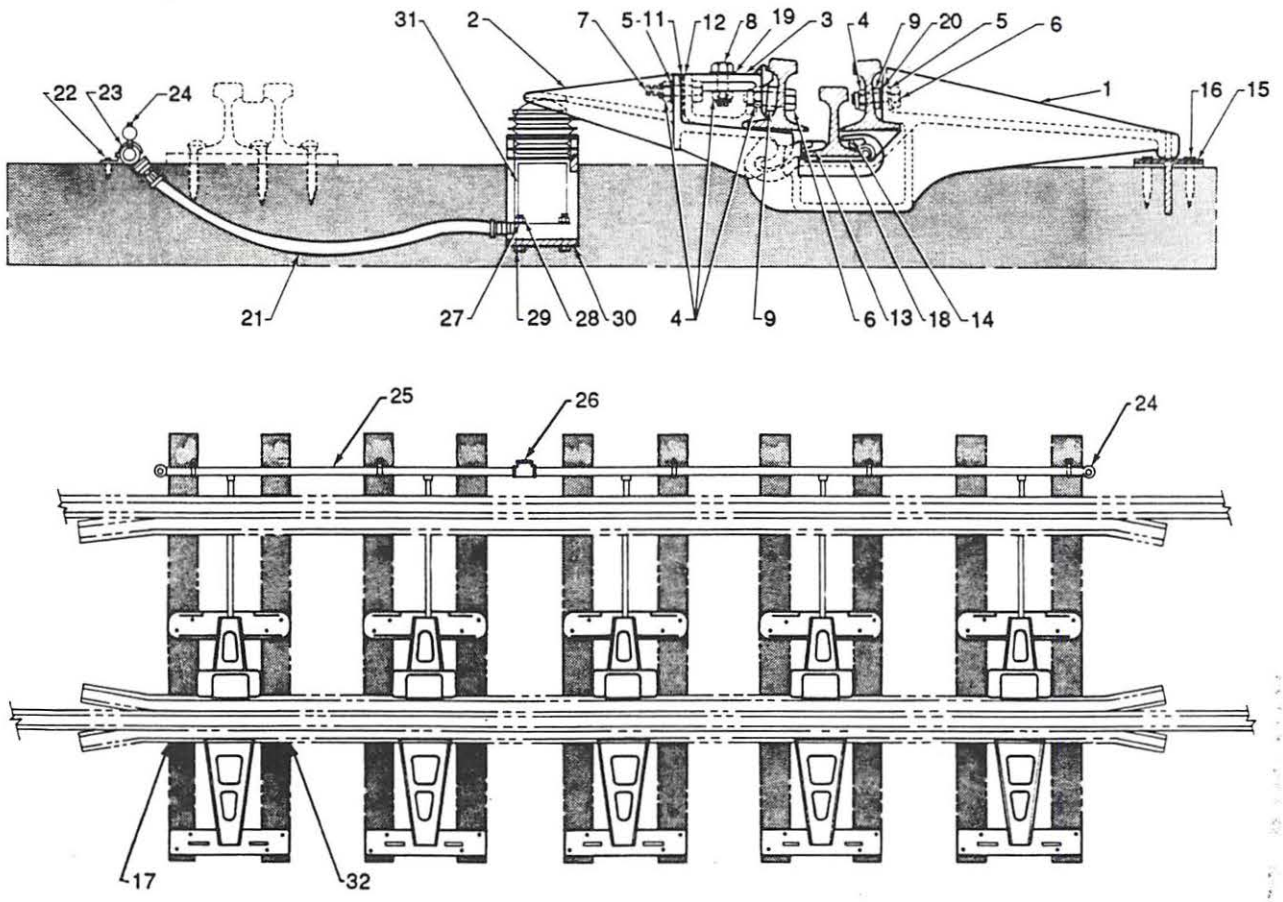
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	**WRENCH,** 2' - 10 1/2" long, for 3" hex. nuts (4 5/8" across flats)	**P71-207**
*2	**PLIERS,** for applying retaining rings to crank pins	**P71-372**
*3	**STONE,** for dressing motor commutor	**P71-305**
4	**WRENCH COMPLETE,** ratchet, for spring rod nuts, includes socket Ref. 5	**P71-201**
5	**SOCKET,** for 2 3/8" hex, spring rod nuts, for use with wrench Ref. 4	**P71-199**
6	**INSTALLER,** for springs Refs. 110 & 111, page 2	**P71-176**
7	**BAIL,** for removing crank pin	**P71-633**
*8	**SOCKET,** for 1 5/8" hex. nuts	**P71-200**
*9	**FILE,** for undercutting slots in motor commutator	**P71-307**
*10	**WRENCH,** spanner, 27 3/4" long, for cap Ref. 6, page 20	**P71-312**
*11	**WRENCH,** 2 3/4" offset, for 2" hex. nuts, (3 1/8" across flats), requires handle Ref. 13, giving a total length of 42"	**P71-605**
12	**WRENCH,** 1 5/16" offset, for 1" nuts (1 1/2" across flats), requires handle Ref. 15 giving a total length of 29 1/2"	**P71-606**
*13	**HANDLE,** only, 36" long, for wrench Ref. 11	**P71-607**
*14	**HANDLE,** only, 30" long for wrench Ref. 16	**P71-549**
*15	**HANDLE,** only, 24" long for wrench Ref. 12	**P71-608**
*16	**WRENCH,**1 3/8" offset, for 1" hex.nuts, (1 5/8" across flats) required handle Ref. 14 giving a total length of 29 1/2"	**P71-670**
17	**INSTALLER,** for shims Refs. 22 & 23, page 2	**P71-304**

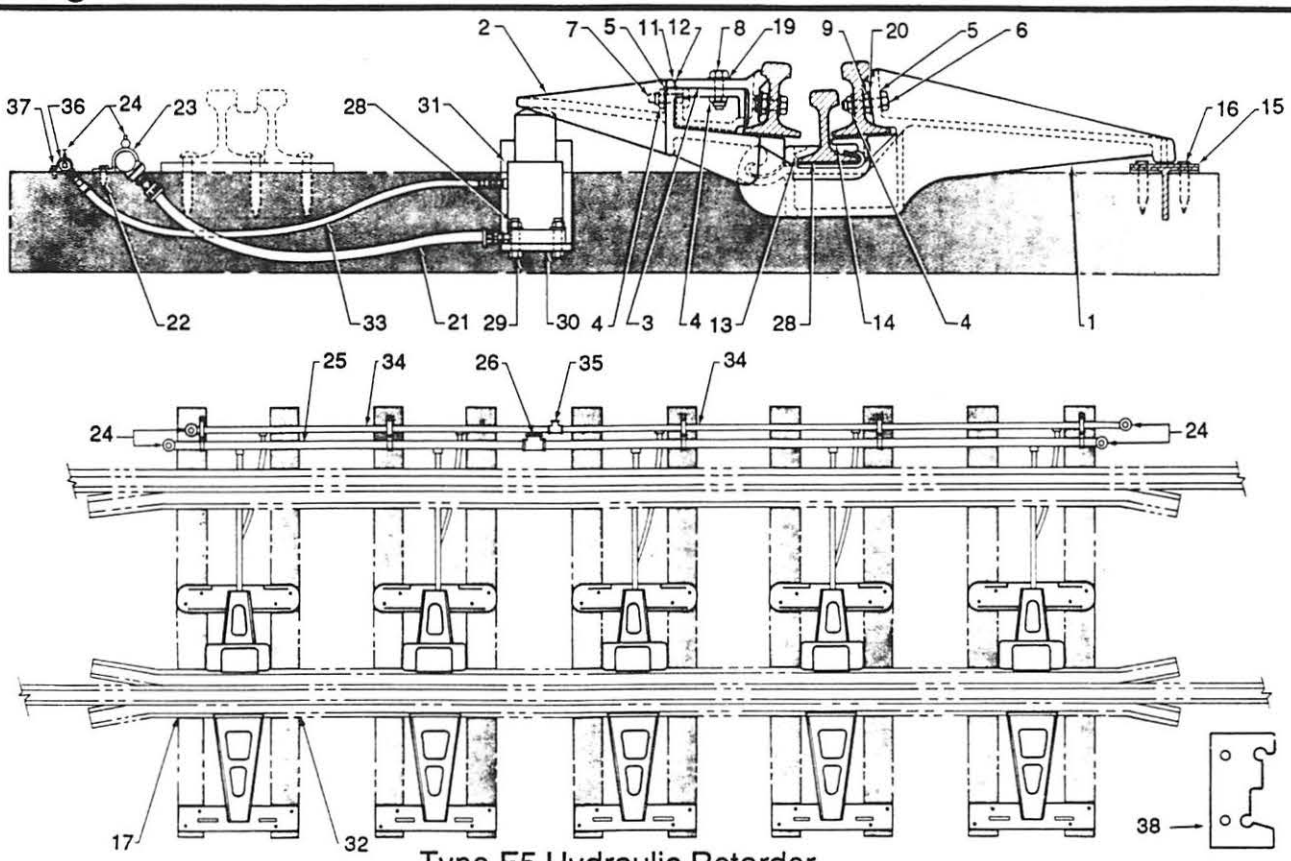
* = Commercial Items



Type F4 Weight Responsive Inert Retarder.



Type F4 Hydraulic Controlled Weight Responsive Retarder.



Type F5 Hydraulic Retarder

Types F4 and F5 Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	**LEVER** - outside	**P71-735**
2	**LEVER** - inside	**P71-736**
3	**BRACE**	**P71-737**
4	**NUT,** 1" - 8 hex, lock	**P71-738**
5	**WASHER**	**P71-739**
6	**SCREW,** 1" - 8 x 3 3/4" hex hd	**P71-740**
7	**SCREW,** 1" - 8 x 4 1/2" hex hd	**P71-741**
8	**SCREW,** 1" - 8 x 3" hex hd	**P71-742**
9	**BLOCK,** filler	**P71-743**
10	**PEDESTAL,** for use with 132 lb. rail	**P71-744**
10A	**PEDESTAL,** for use with 115 lb. rail	**P71-779**
11	**SHIM,** .1196"	**P71-745**
12	**SHIM,** .250"	**P71-746**
13	**FILLER,** for use with 132 lb. rail	**P71-747**
13A	**FILLER,** for use with 115 lb. rail	**P71-780**

Types F4 and F5 for Car Retarders

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
14	**FILLER**	**P71-748**
15	**BRACKET,** for use with 132 lb. rail	**P71-749**
15A	**BRACKET,** for use with 115 lb. rail	**P71-781**
16	**SCREW,** 3/4" x 5" lag	**P71-750**
17	**PLATE,** tie for use with 132 lb. rail	**P71-751**
17A	**PLATE,** tie, for use with 115 lb. rail	**P71-782**
18	**FILLER**	**P71-752**
19	**WASHER,** 1 1/16" x 2 1/2"	**P71-753**
20	**WASHER,** .1196"	**P71-754**
20A	**WASHER,** .0598	**P71-756**
20B	**WASHER,** .0149	**P71-757**
21	**HOSE**	**P71-758**
22	**SCREW,** 3/8" x 1 1/2" lag	**P71-759**
23	**CLAMP,** 1 1/2" pipe	**P71-760**
24	**BLEEDER VALVE**	**P71-761**
25	**PIPE COMPLETE** - manifold, 17'8" long	**P71-762**
25A	**PIPE COMPLETE,** 13'1" long	**P71-783**
25B	**PIPE COMPLETE,** 8'6" long	**P71-784**
26	**TEE,** 2 1/2"	**P71-763**
27	**WASHER,** 5/8" lock	**P85-109**
28	**NUT,** 5/8" -11 hex	**P71-766**
29	**SCREW,** 5/8" - 11 x 3" hex. hd	**P71-767**
29A	**SCREW,** 5/8" - 11 x 4 1/2" hex. hd	**P71-768**
30	**BRACKET,** cylinder	**P71-769**
30A	**BRACKET,** cylinder	**P76-785**
31	**CYLINDER,** for F4 retarder	**P71-770**
31A	**CYLINDER,** for F5 retarder	**P71-786**
32	**PLATE,** anti-creeping	**P71-771**
33	**HOSE**	**P71-772**
34	**PIPE COMPLETE**	**P71-773**
34A	**PIPE COMPLETE**	**P71-774**
35	**TEE,** 3/4"	**P71-775**
36	**CLAMP,** 3/4" pipe	**P71-776**
37	**LAG SCREW**	**P71-777**
38	**GAUGE**	**P71-778**

CATALOG SECTION P71
PARTS LIST
HYDRA-TRAK™ Retarder Mechanism

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GENERAL RAILWAY SIGNAL
A UNIT OF GENERAL SIGNAL
ROCHESTER NEW YORK 14692

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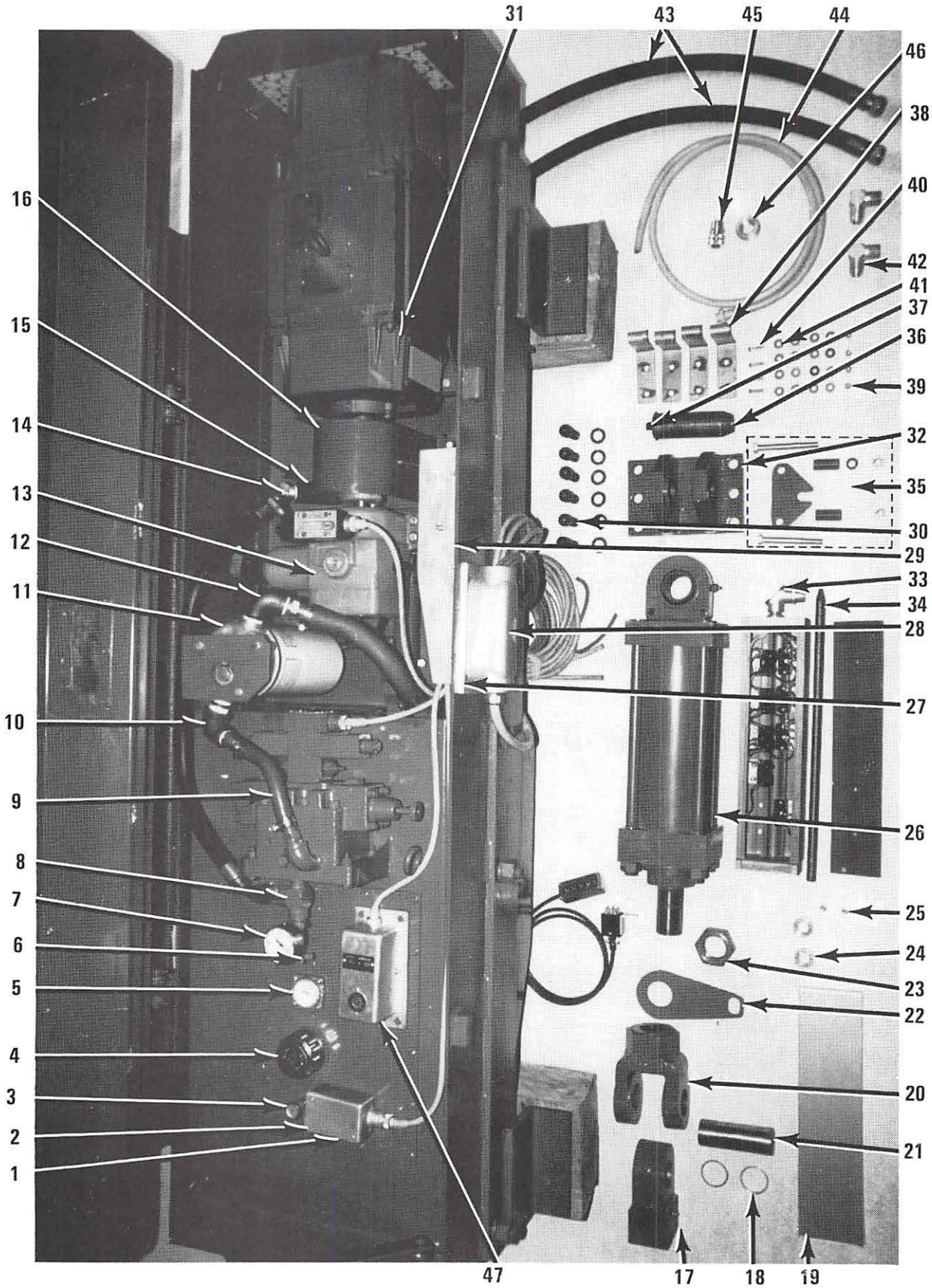
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HYDRA-TRAK MECHANISM

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	JUNCTION BOX, with cover	P71-801
2	GAUGE, temperature and level	P71-802
3	THERMOMETER	P71-803
4	BREATHER, air filter	P71-804
5	GAUGE, level	P71-805
6	VALVE	P71-806
7	GAUGE, pressure, 0-3000 PSI	P71-807
8	STREET TEE	P71-808
9	AIR HOSE, 3/4" x 8-1/2" long	P71-809
10	ELBOW	P71-810
11	FILTER	P71-811
12	STREET ELBOW, 1"	P71-812
13	PUMP	P71-813
14	ADAPTER, male ell	P71-814
15	CHECK VALVE	P71-815
16	MOTOR GUARD	P71-816
17	KNUCKLE	P71-817
18	RETAINING RING	P71-818
19	COVER, for limit switch	P71-819
20	CLEVIS	P71-820
21	PIN, for clevis	P71-821
22	BRACKET, for cylinder rod and limit switch rod	P71-822
23	NUT, jam nut for ram	P71-823
24	COLLAR, for 3/4" shaft	P71-824
25	BLEED OFF VALVE	P71-825
26	RAM, 5" x 11"	P71-826
26A	ROD SEAL KIT	P71-885
26B	ROD SCRAPER	P71-886
26C	ROD BEARING	P71-887
27	ADAPTER PLATE	P71-827
28	CONDULET	P71-828
29	ALUMINUM BOX, with cover	P71-829
30	CAP SCREW, socket head, with washer	P71-830
31	MOTOR, 15 hp d-c	P71-831

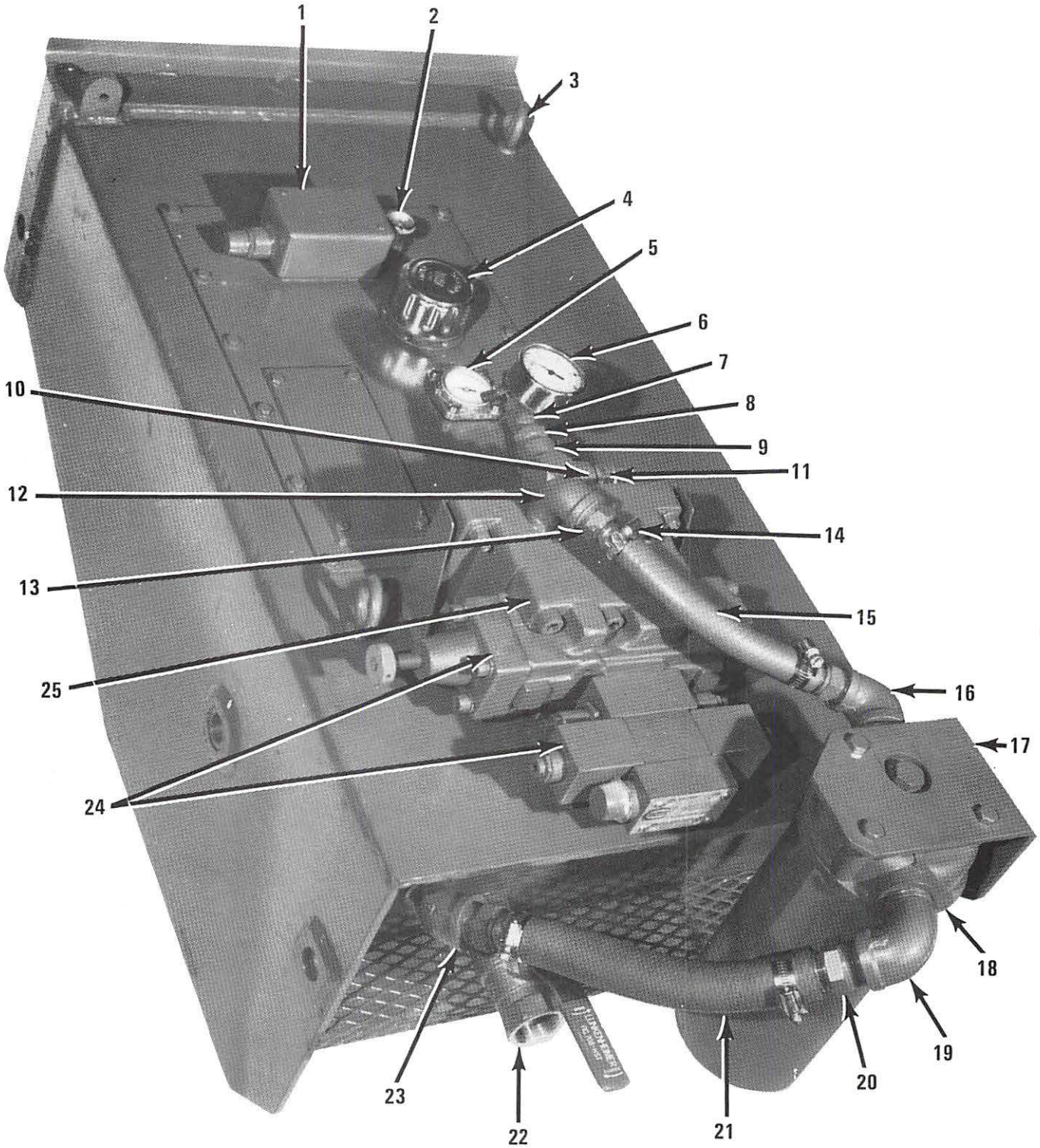
HYDRA-TRAK MECHANISM (Cont'd)

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
31A	MOTOR, 15 hp a-c	P71-874
32	YOKE BRACKET	P71-832
33	LIMIT SWITCH	P71-833
34	LIMIT SWITCH ROD	P71-834
35	BRACKET	P71-835
36	PIN, for rear clevis	P71-836
37	RETAINING RING, for clevis pin	P71-837
38	BRACKET, for limit switch	P71-838
39	NUT, 1/4" -20, cad. plated	P71-839
40	SCREW, 1/4" -20 x 1" lg., cad. plated	P71-840
41	WASHER, 1/4" flat, cad. plated	P71-841
42	ADAPTER, male ell	P71-842
43	RAM CYLINDER HOSE	P71-843
44	CABLE, with 8-pin female connector	P71-844
45	CABLE CONNECTOR, for 3/4" bushing	P71-845
46	BUSHING, 3/4"	P71-846
47	IMMERSION OIL HEATER, optional	P71-888

NOTES: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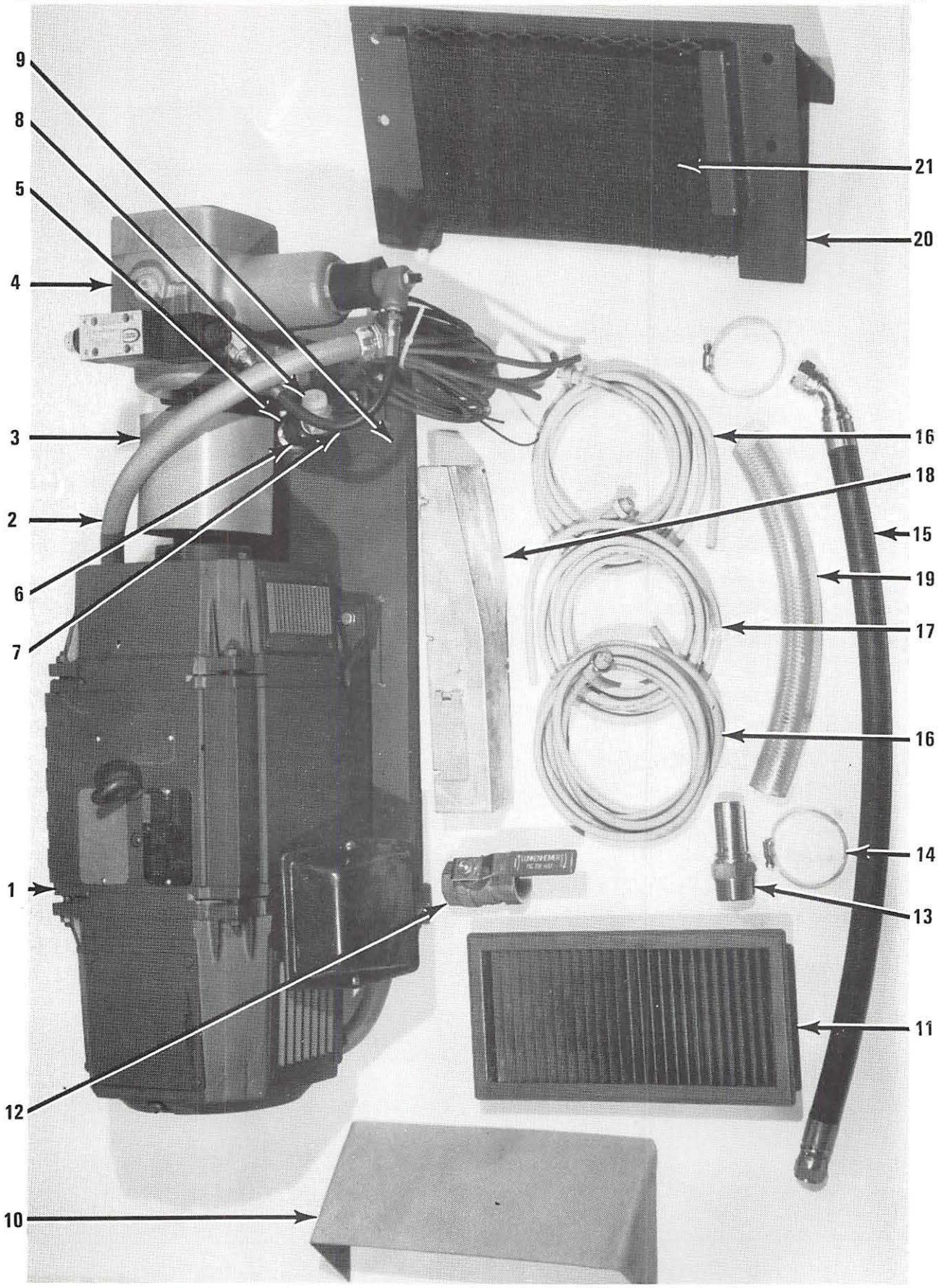
TANK ASSEMBLY

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	GAUGE, temperature and level	P71-802
2	THERMOMETER	P71-803
3	EYE BOLT	P71-847
4	BREATHER, air filter	P71-804
5	GAUGE, level	P71-805
6	GAUGE, pressure	P71-807
7	VALVE	P71-806
8	BUSHING	P71-848
9	TANK CLEANER, magnetic	P71-849
10	STREET TEE	P71-808
11	ADAPTER, male	P71-850
12	STREET ELBOW, 3/4", black iron	P71-851
13	HOSE BARB, for 3/4" hose	P71-852
14	CLAMP, for hose	P71-853
15	AIR HOSE, 3/4" x 8-1/2" long	P71-809
16	ELBOW	P71-810
17	BRACKET, for filter	P71-854
18	FILTER	P71-811
19	STREET ELBOW, 1"	P71-812
20	HOSE BARBS, for 1" hose	P71-855
21	HOSE, 1" x 11" long	P71-856
22	BALL VALVE, 1-1/4"	P71-857
23	STREET ELBOW, 1", 45 degree	P71-858
24	CONTROL VALVE	P71-859
25	VALVE SUBPLATE, with bolts	P71-860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MOTOR ASSEMBLY

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	MOTOR, 15 hp, d-c	P71-831
1A	MOTOR, 15 hp, a-c	P71-874
2	FILTER	P71-811
3	MOTOR GUARD	P71-816
4	PUMP	P71-813
5	STREET ELBOW, 1" male thd., 3/4" female thd.	P71-861
6	CHECK VALVE	P71-815
7	ADAPTER, male ell	P71-814
8	DRESSER ELL	P71-862
9	BASE PLATE, for a-c or d-c motor	P71-863
10	HOUSING COVER, for air filter	P71-864
11	VENT, air outlet	P71-865
12	BALL VALVE, 1-1/4"	P71-857
13	HOSE BARB, for 1-1/4" hose	P71-866
14	CLAMP, for 1-1/4" hose	P71-867
15	HOSE, for pump	P71-868
16	CABLE, with 3-pin connector	P71-869
17	CABLE, with 2-pin connector	P71-870
18	ALUMINUM BOX, with cover	P71-829
19	HOSE, 1-1/4", for pump inlet	P71-871
20	HOUSING, for air filter	P71-872
21	AIR FILTER	P71-873

CATALOG SECTION P71
PARTS LIST
HYDRA-TRAK™ Retarder Mechanism
For Types F4 and F5 Retarders

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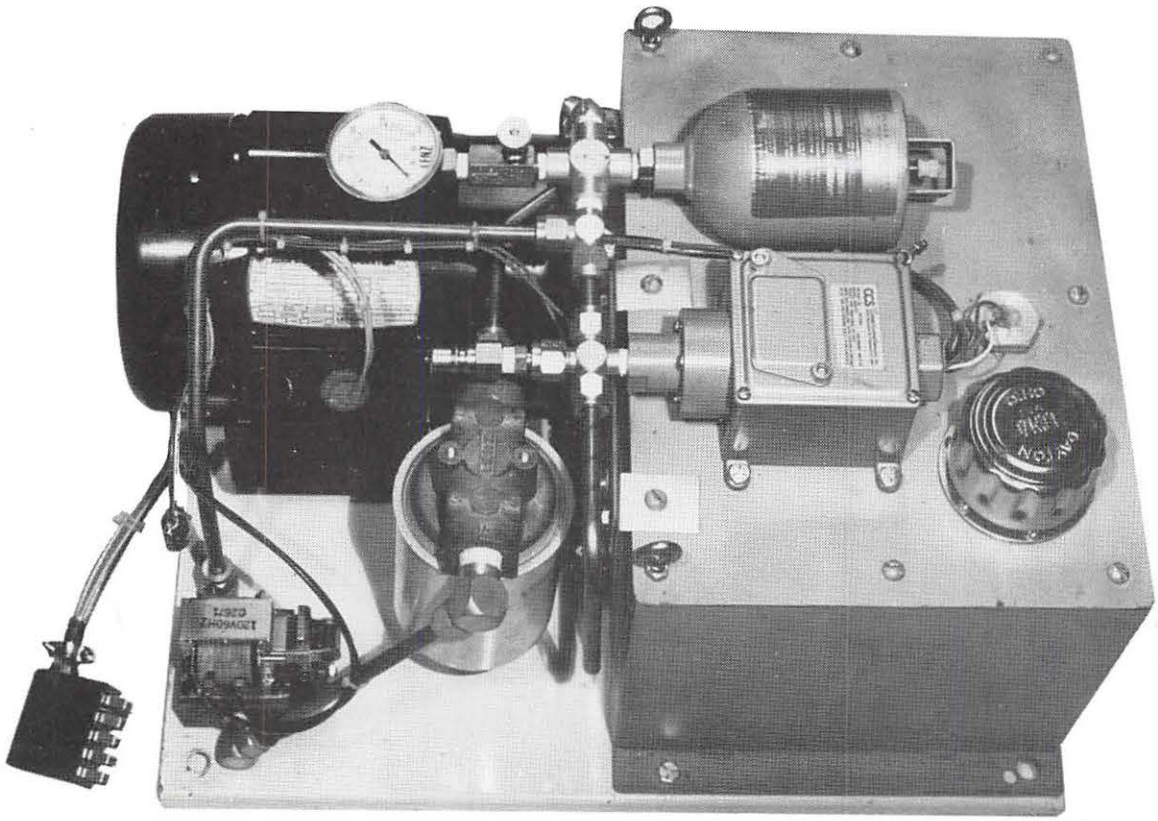

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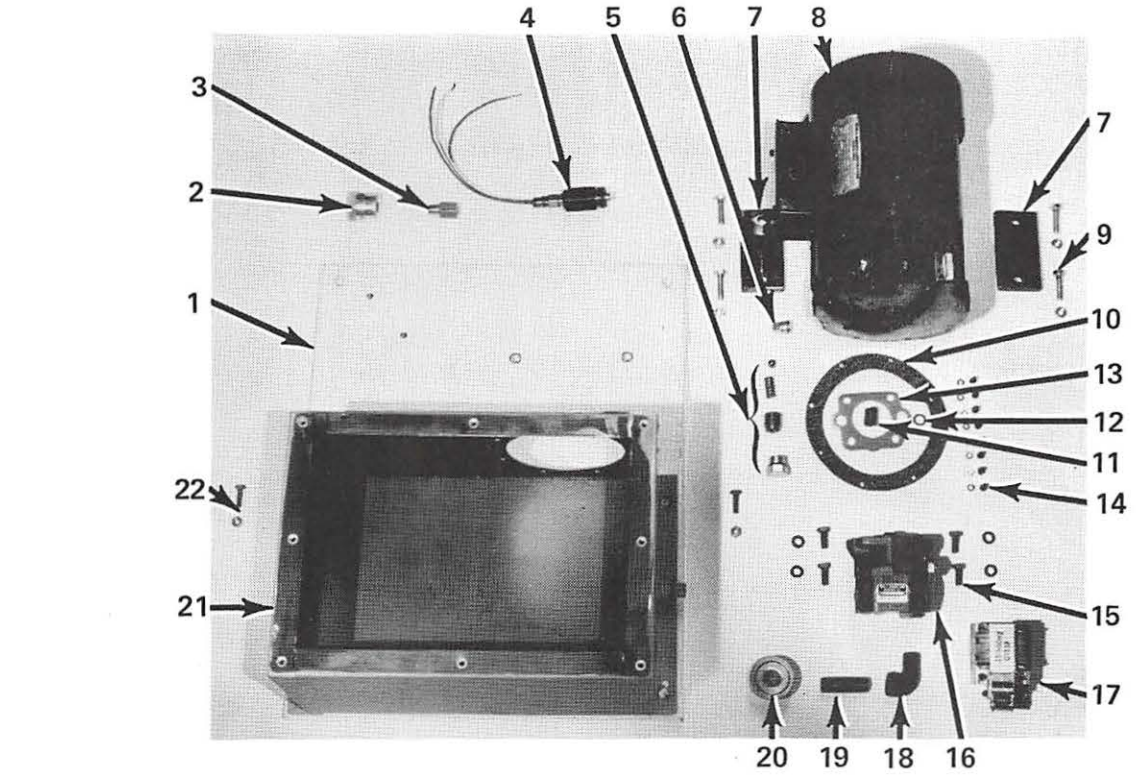
Pump unit.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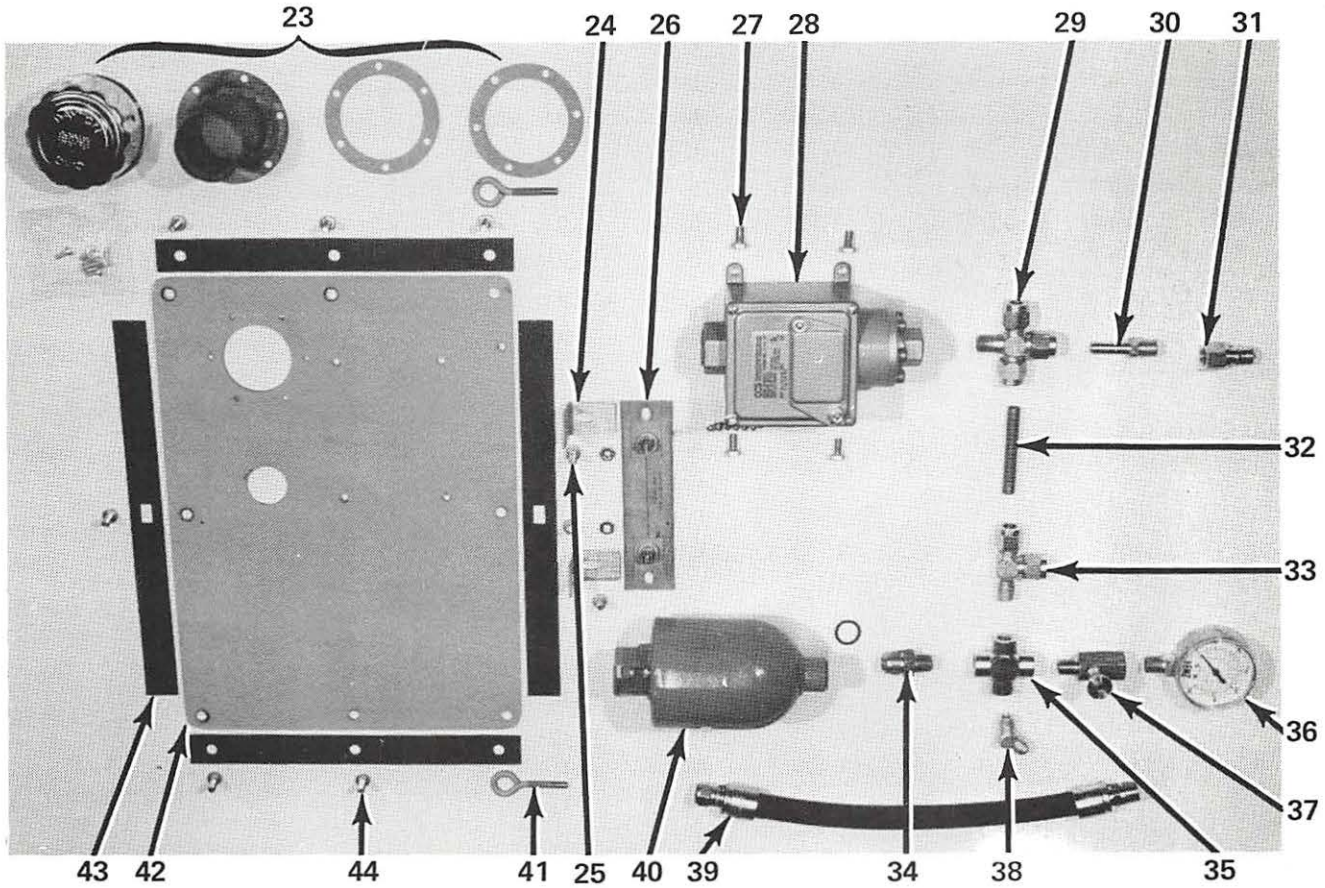
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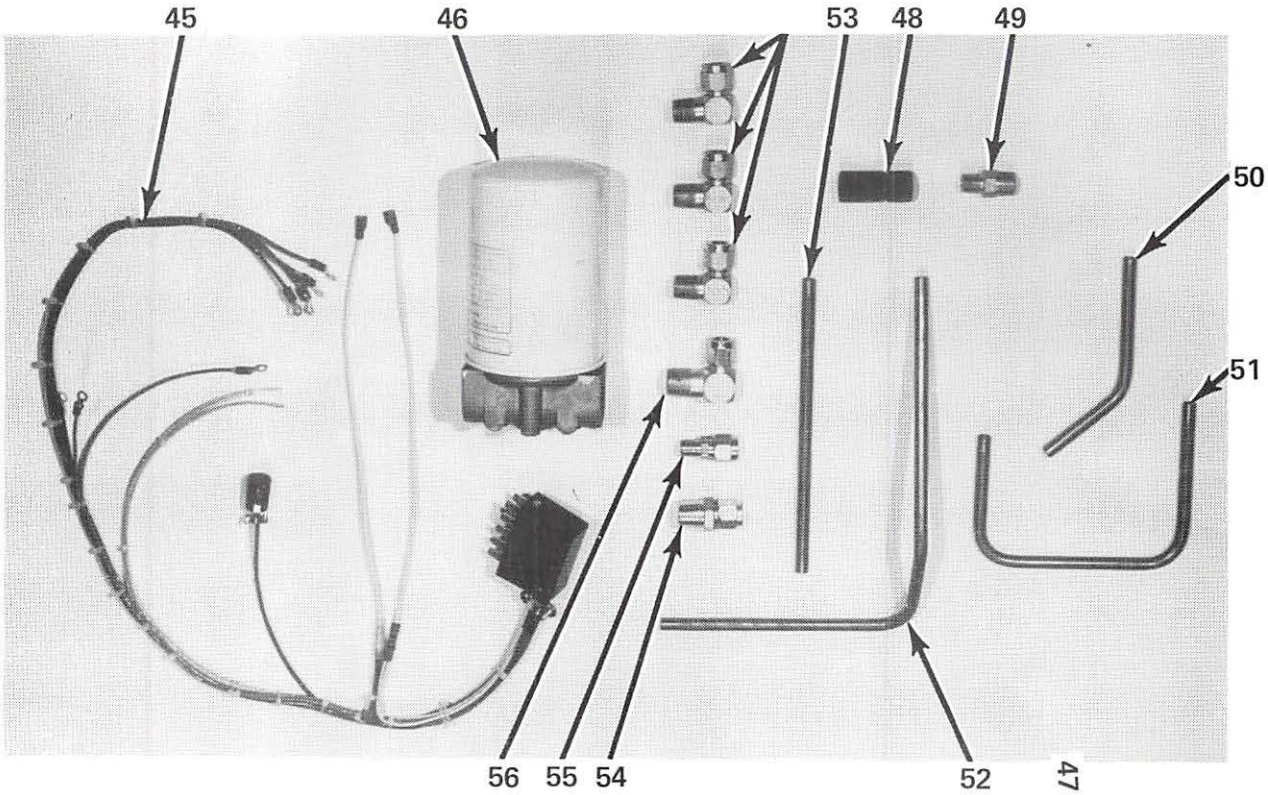

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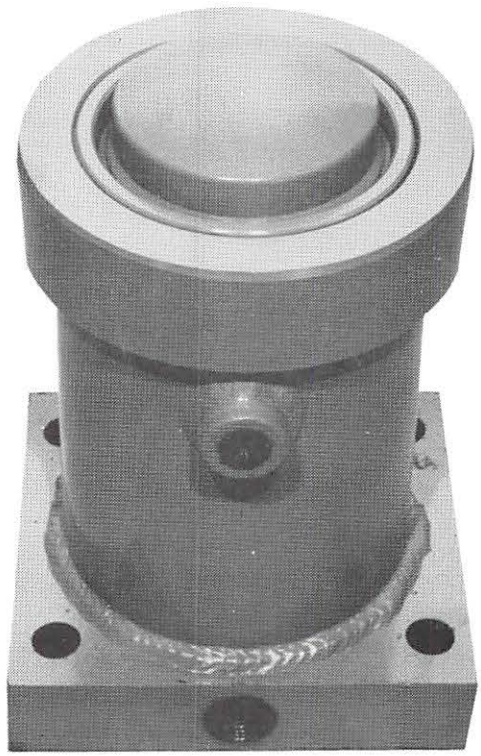

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HYDRA-TRAK MECHANISM FOR F4 AND F5 RETARDERS

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	PUMP UNIT, for Type F4 retarder	P71-1000
A1	PUMP UNIT, for Type F5 retarder	P71-1059
1	PLATE	P71-1001
2	BUSHING	P71-1002
3	REDUCING CONNECTOR	P71-1003
4	GAUGE, temperature and level	P71-802
5	VALVE, relief	P71-1004
6	PLUG, hollow hex	P71-1005
7	SPACER	P71-1006
8	MOTOR	P71-1007
9	SCREW, with nut	P71-1008
10	GASKET, for motor	P71-1009
11	COUPLING, pump motor	P71-1010
12	O RING	P71-1011
13	GASKET, for pump	P71-1012
14	SCREW, with washer, for mounting motor cover	P71-1013
15	SCREW, with washer, for mounting pump	P71-1014
16	PUMP	P71-1015
17	SOLENOID VALVE	P71-1016
18	STREET ELL	P71-1017
19	PIPE NIPPLE	P71-1018
20	FILTER, for inlet strainer	P71-1019
21	RESERVOIR	P71-1020
22	SCREW, with nut, for mounting reservoir	P71-1021
23	FILLER CAP	P71-1022
24	MOUNTING BRACKET, for heater	P71-1023
25	SCREW, with nut	P71-1024
26	HEATER	P71-1025
27	SCREW	P71-1026
28	PRESSURE SWITCH ASSEMBLY	P71-1027
29	MALE CROSS	P71-1028
30	TUBE – PIPE NIPPLE	P17-1029
31	QUICK CONNECT, for Type F4 hand pump	P71-1030

HYDRA-TRAK MECHANISM FOR F4 AND F5 RETARDERS (Cont'd)

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
32	TUBE	P71-1031
33	MALE RUN TEE	P71-1032
34	MALE ADAPTER	P71-1033
35	FEMALE PIPE CROSS	P71-1034
36	PRESSURE GAUGE	P71-1035
37	CUT OFF VALVE	P71-1036
38	ADAPTER	P71-1037
39	PUMP HOSE	P71-1038
40	ACCUMULATOR, 15 cu. in.	P71-1039
41	EYEBOLT	P71-1040
42	COVER, for reservoir	P71-1041
43	GASKET	P71-1042
44	SCREW, for cover	P71-1043
45	HARNESS, electrical	P71-1044
46	FILTER COMPLETE	P71-1045
46A	FILTER ELEMENT ONLY	P71-1058
47	MALE ELBOW	P71-1046
48	CHECK VALVE	P71-1047
49	REDUCING PIPE NIPPLE	P71-1048
50	TUBING	P71-1049
51	TUBING	P71-1050
52	TUBING	P71-1051
53	TUBING	P71-1052
54	MALE CONNECTOR	P71-1053
55	MALE CONNECTOR	P71-1054
56	MALE ELBOW	P71-1055
57	RAM, for F4 retarders	P71-1056
58	RAM, for F5 retarders	P71-1057
NOT SHOWN	HOSE, from manifold to ram	P71-1060
NOT SHOWN	TUBING REPAIR KIT	P71-1061
NOT SHOWN	RAM SEAL KIT	P71-1062
NOT SHOWN	HOSE, from pump to manifold	P71-1063

HYDRA-TRAK MECHANISM FOR F4 AND F5 RETARDERS (Cont'd)

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
NOT SHOWN	MANIFOLD, for 5 rams	P71-1064
	MANIFOLD, for 7 rams	P71-1065
	REPLACEMENT INDICATOR LAMPS	P71-1066
	LIGHT INDICATOR COMPLETE, includes housing and amber lamp units.	P71-1067
	REPLACEMENT HOUSING, with cover	P71-1068

RECOMMENDED SPARE PARTS FOR TYPES F4 AND F5 RETARDER MECHANISMS

It is recommended that the following parts be ordered for convenience as spares.

No. of Spares Required Per Units in Operation			DESCRIPTION	CATALOG NUMBER
Units 1-5	Units 6-25	Units 26-up		
0	1	1	TYPE F4 PUMP UNIT, without housing	P71-1000
0	1	1	TYPE F5 PUMP UNIT, without housing	P71-1059
1	1	2	ELECTRIC MOTOR	P71-1007
1	1	2	PUMP	P71-1015
1	2	2	PRESSURE SWITCH ASSEMBLY	P71-1027
1	1	2	ACCUMULATOR	P71-1039
1	2	2	SOLENOID VALVE	P71-1016
1	1	1	PRESSURE GAUGE, 3000 PSI	P71-1035
1	1	2	PUMP HOSE, inside housing	P71-1038
2	3	5	HOSE, from manifold to ram	P71-1060
1	3	5	RAM, for F4 retarder	P71-1056
1	3	5	RAM, for F5 retarder	P71-1057
1	2	3	RAM HOSE, from pump to manifold	P71-1063
1	2	3	TUBING REPAIR KIT	P71-1061
5	10	15	RAM SEAL KIT	P71-1062
1	1	1	TEMPERATURE AND LEVEL GAUGE	P71-802
2	5	5	FILTER ELEMENT (change annually)	P71-1058
2	3	5	INDICATOR LAMPS (optional)	P71-1066

CATALOG SECTION P71

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ELECTRIC CAR RETARDERS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P71-100	0570-10		WASHER	7
P71-101			BOLT & NUT	7
	2818-3		SCREW	
	1048-5		NUT	
P71-102	0199-1		NUT	5
P71-103	0277		COTTER	6
P71-104	0293-40		NUT	7
P71-105	0380		SCREW	21
P71-106	0570-3		WASHER	5
P71-108	0699-4		TEE	14
P71-109	01250-3		WASHER	29
P71-110	01273-19		WASHER	11
P71-113	03604-24		SCREW	26
P71-114	03610-16		SCREW	15
P71-116	304-97		PLATE	8
P71-117	304-145		PLATE	8
P71-118	304-146		PLATE	8
P71-119	304-154		PLATE	8
P71-120	304-160		PLATE	8
P71-121	304-161		PLATE	8
P71-122	304-162		PLATE	8
P71-126	401-36		NAME PLATE	17
P71-127	420-9		COLLAR	26
P71-128	423-4		BOLT	32
P71-129	425-3		KEY	25
P71-130	425-5		KEY	21
P71-131	441-353		STUD	31
P71-132	500		PIN	21
P71-133	504-301		PIN	32
P71-134	504-302		PIN	31
P71-135	504-306		PIN	32
P71-136	504-395		PIN	5
P71-137	504-402		PIN	32
P71-138	590-54		WASHER	31
P71-139	626-28		WASHER	6
P71-140	626-29		SHIM	5
P71-141	626-31		WASHER	6
P71-142	626-88		WASHER	6
P71-143	626-143		WASHER	11
P71-144	626-161		WASHER	26
P71-145	626-176		WASHER	18
P71-146	626-177		WASHER	17
P71-147	626-178		WASHER	11
P71-148	626-190		WASHER	22
P71-149	645-10		NUT	31
P71-150	17188-4		PIN	21
P71-151	715-59		PIN	11
P71-152	730-49GR1		PIN COMPLETE	6
P71-153	730-50GR1		PIN COMPLETE	5
P71-155	739-1		BUSHING	14
P71-156	786-292		SPRING	11
P71-157	786-297		SPRING	11
P71-158	786-306		SPRING	4
P71-159	786-307		SPRING	4
P71-160	786-309		SPRING	8
P71-161	786-319		SPRING	11
P71-162	786-352		SPRING	31
P71-163	56160-21		BOLT	7
P71-164	980-45		STUD	31
P71-165	980-47		STUD	32
P71-167	1225-9		WASHER	22
P71-168	1332-55		BUS BAR	26
P71-169	1396-17		SPRING	32
P71-170	59825-96		TERMINAL	35
P71-171	2472-2		SCREW	21
P71-172	2521-3		SCREW	21
P71-173	2818-3		SCREW	17
P71-174	2890-3		SCREW	32
P71-175	2933-25		PLUG	18
P71-176	3143 GR2		INSTALLER	45
P71-177	3947		PIN	26
P71-178	4811-14		SCREW	14
P71-180	3343-30		SCREW	13
P71-181	5676-6		EYEBOLT	15
P71-182	5713-36		RING	5
P71-183	6714-40		BUSHING	13
P71-184	6714-66		BUSHING	11
P71-185	6714-67		BUSHING	6
P71-186	6714-282		BUSHING	6
P71-187	6714-283		BUSHING	7
P71-188	6894-3		SCREW	14
P71-189	7175-1		PIN	21
P71-190	7609-5		COLLAR	26
P71-192	8942-14		BUSHING	26
P71-193	8942-141		BUSHING	18
P71-194	8942-118		BUSHING	18
P71-195	8942-142		BUSHING	18
P71-196	12267-2		BEARING	22
P71-197	12267-3		BEARING	22
P71-198	13014-51		GASKET	18
P71-199	13747-4GR1		SOCKET	45
P71-200	13747-8		SOCKET	45

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ELECTRIC CAR RETARDERS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P71-201			WRENCH & SOCKET	45
	13748-1GR1		WRENCH	
	13747-4GR1		SOCKET	
P71-202	13751		BEARING	8
P71-203	13751-3		BEARING	5
P71-204	14871-1GR2		SPACER	7
P71-205	14879		BRACKET	7
P71-206	14879-1		BRACKET	7
P71-207	15196-5GR1		WRENCH	45
P71-211	15350-19		PIN	15
P71-212	15450-2		BOLT	7
P71-213	15450-3		BOLT	7
P71-214	15462		PEDESTAL	4
P71-215	15462-2		PEDESTAL	5
P71-216	15462-3		PEDESTAL	5
P71-217	15462-4		PEDESTAL	5
P71-218	15465-8GR2		SHOE BEAM	4
P71-219	15465-9GR2		SHOE BEAM	4
P71-220	59825-75		TERMINAL	35
P71-221	59825-63		TERMINAL	35
P71-222	15745-3		NIPPLE	14
P71-223	15745-4		NIPPLE	15
P71-224	16001 GR2		BEARING	6
P71-227	17186 GR4		CASE COMPLETE	
P71-228	17186 GR5		CASE COMPLETE	
P71-229	17188-19		PIN	
P71-230	17188-29		PIN	
P71-231	17573-2		SUPPORT	
P71-232	17573-4		SUPPORT	
P71-233	17574-3		GUIDE	
P71-234	17574-4		GUIDE	
P71-235	17574-6		GUIDE	
P71-236	17574-7		GUIDE	
P71-237	17604		STOP	
P71-238	17708-5		SCREW	
P71-239	17708-99		SCREW	
P71-242	17749-5		STUD	
P71-243	17903		FINGER	39, 41
P71-244	17903-1		SPRING	
P71-245	17903-2		SHUNT	
P71-246	17903-3		LEAD	
P71-247	17903-4		SCREW	
P71-248	17903-5		STRAP	
P71-249	17903-6		CONTACT	
P71-250	17903-7		SPRING	
P71-251	17903-8		ARC BOX	
P71-252	17903-9		ARC HORN	
P71-253	17903-10		COIL	
P71-254	17903-11		COIL	
P71-255	17903-12		CONTACT	
P71-256	17903-13		FINGER	
P71-257	17903-17		ARM	
P71-258	17903-18		SCREW	
P71-260	17903-20		COIL	
P71-261	17903-21		CONTACT	
P71-266	17903-27		CONTACT BUTTON	
P71-267	17903-28		CONTACT ARM	
P71-268	17903-30		INTERLOCK	
P71-269	17903-32		CONTACT	
P71-270	17903-33		SPRING	
P71-272	17903-35		SPRING	
P71-273	17903-36		PIN	
P71-274	17903-37		WASHER	
P71-275	17903-38		CONTACT	
P71-277	17903-53		COIL	
P71-278	17903-54		BASE	
P71-279	17903-44		ARMATURE	
P71-280	17903-45		STOP	
P71-281	17903-46		STUD	
P71-282	17903-50		ARMATURE	
P71-284	18461 GR4		BRAKE SHOE	
P71-285	20860-5		HOOD	
P71-286	21357		SPRING	
P71-287	21506-75		PLATE	
P71-288	21506-84		PLATE	
P71-289	21506-85		PLATE	
P71-290	21506-86		PLATE	
P71-291	21506-87		PLATE	
P71-292	21506-89		PLATE	
P71-293	21506-91		PLATE	
P71-294	21506-95		PLATE	
P71-295	21506-96		PLATE	
P71-296	21506-97		PLATE	
P71-297	21506-111		PLATE	
P71-298	21506-112		PLATE	
P71-299	21506-122		PLATE	
P71-300	21506-123		PLATE	
P71-301	21506-124		PLATE	

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ELECTRIC CAR RETARDERS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P71-302	21506-139		PLATE	
P71-303	22859-1		PIN	
P71-304	23411 GR1		INSTALLER	
P71-305	25956-2		STONE	
P71-306	27059		BUSHING	
P71-307	28247		FILE	
P71-308	28262-12		ROD	
P71-309	28262-24		ROD	
P71-310	28262-33		ROD	
P71-311	28262-54		ROD	
P71-313	28876-2		SCREW	
P71-315	29493-6		BUTTON	
P71-318			CASE 52645 -1 GR5	
	52626-2		COVER	
	8942-141		BUSHING	
	8942-142		BUSHING	
	2933-25		PLUG	
	715-59	2	PIN	
	2891-8	12	SCREW	
	01273-11	12	WASHER	
	18524-5		PLUG	
	32164	4	PIN	
			PRINT CASE COMP 52645-1	
P71-319	31939-24		PINION	
P71-320	31939-25		PINION	
P71-321	31942-11		ROLLER	
P71-322	31942-98		ROLLER	
P71-323	32164		PIN	
P71-325	32367-2		CAP	
P71-326	34232-29		OILER	
P71-327	34232-60		OILER	
P71-328	34232-78		OILER	
P71-329	34499-4		COVER	
P71-330	34938-21		GEAR	
P71-332	35315-5		NUT	
P71-333	35516-2		BUSHING	
P71-334	35516-3		BUSHING	
P71-337	38171-2		SCREW	
P71-338	38281-261		BOARD	
P71-340	38281-342		BOARD	
P71-341	39846-28GR1		PLATE	
P71-342	39897-40		RESISTOR	
P71-343	39964-65		BOARD	
P71-346	03615-24		SCREW	
P71-347	40452-27		LINK	
P71-348	40452-28		LINK	
P71-349	40907-12		NUT	
P71-350	40907-19		NUT	
P71-351	40907-20		NUT	
P71-352	41673-42		SHIM	
P71-353	41673-43		SHIM	
P71-354	42333-43		NUT	
P71-356	42333-48		NUT	
P71-357	42760-5GR3		CONNECTOR	
P71-359	42760-5GR10		CONNECTOR	
P71-360	42760-5GR11		CONNECTOR	
P71-361	42760-5GR12		CONNECTOR	
P71-362	42760-5GR13		CONNECTOR	
P71-364	42799-7GR3		CONTACT	
P71-365	43041-1		ROLLER	
P71-367	43460-1		GASKET SP FT	
P71-368	43460-23		GASKET SP FT	
P71-369	43956-2GR1		CAP	
P71-371	45688-16GR2		COUPLING	
P71-372	45794-5		PLIERS	
P71-373	45929-10		NIPPLE	
P71-374	46498		WASHER	
P71-375	47039		WASHER	
P71-376	47474-1		SHIELD	
P71-377	47474-13		SHIELD	
P71-380	47754-264		BRACKET	
P71-381	47754-265		BRACKET	
P71-383	48517-4		DIAL	
P71-385	49455-3GR4		SCREW	
P71-387	49615-5GR3		FINGER	
P71-388	49615-7GR2		FINGER	
P71-389	49615-13GR1		FINGER	
P71-390	49615-53GR1		FINGER	
P71-391	49615-54GR1		FINGER	
P71-392	49655-7		SPACER	
P71-393	49655-223		SPACER	
P71-394	49865-90		STRAP	
P71-395	50108-2		COLLAR	
P71-396	50253-256		COVER	
P71-397	50482-33GR1		RESISTOR	
P71-398	50570-5GR1		CRANK	
P71-400	50758-2		SLEEVE	
P71-401	51380-2		ELBOW	
P71-402	51380-6		ELBOW	

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ELECTRIC CAR RETARDERS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P71-403	51484-5		COVER	
P71-404	51931-4		CLIP	
P71-405			CIRCUIT BREAKER DWG 51943-85	
	51943-84		BREAKER PRINT 61286 GR5	
P71-406	52047-9		NUT	
P71-408	52115-8		GASKET	
P71-409	52138-53		CAM	
P71-410	52138-54		CAM	
P71-411	52138-56		CAM	
P71-412	52138-57		CAM	
P71-413	52138-58		CAM	
P71-414	52138-69		CAM	
P71-415	52138-70		CAM	
P71-416	52138-71		CAM	
P71-417	52138-83		CAM	
P71-418	52138-73		CAM	
P71-419	52138-74		CAM	
P71-421	52173-2GR2		COVER	
P71-422			CONNECTOR 52184-2GR.1	
	35505-37		LINK	
	49655-125	2	SPACER	
	28876-4	2	SCREW	
	50062-28	4	SPACER	
	42333-43	2	NUT	
P71-423	52248-1GR1		SUPPORT	
P71-424	52281-447		CAPACITOR	
P71-425	52292-55GR1		BOARD	
P71-426	52292-55GR3		BOARD	
P71-428	52419-2		CAP	
P71-429	52516-73		BOLT	
P71-430	52516-43		BOLT	
P71-431	52516-66		BOLT	
P71-432	52516-69		BOLT	
P71-433	56160-34		BOLT	
P71-434	52516-84		BOLT	
P71-435	52516-86		BOLT	
P71-436	52516-87		BOLT	
P71-437	52516-88		BOLT	
P71-438	56160-32		BOLT	
P71-439	56160-7		SCREW	
P71-440	52516-92		BOLT	
P71-441	52582-11		CRANK	
P71-443	52590-4GR2		MECHANISM	13
P71-448	52592-8		COUPLING	
P71-449	52594-2GR1		ROD	
P71-452	52595-27GR2		MOTOR	
P71-457	52606-7GR1		SPRING ROD	
P71-458	52606-7GR2		SPRING ROD	
P71-459	52606-8GR1		SPRING ROD	
P71-460	52606-9GR1		SPRING ROD	
P71-462	52608-4GR1		GEAR	
P71-463	52608-5GR1		GEAR	
P71-464	52608-6GR1		GEAR	
P71-465	52609-1GR12		CONTROLLER	
P71-466	52609-1GR14		CONTROLLER	
P71-467	52609-1GR15		CONTROLLER	
P71-469	52611-33		SHOE BEAM	
P71-470	52612-64		CHAIR	
P71-471	52612-65		CHAIR	
P71-473	52612-88		CHAIR	
P71-474	52612-92		CHAIR	
P71-476	52612-102		CHAIR	
P71-477	52612-103		CHAIR	
P71-478	52612-104		CHAIR	
P71-479	52612-105		CHAIR	
P71-480	52612-106		CHAIR	
P71-481	52612-107		CHAIR	
P71-485	52613-1		TRUNNION	
P71-486	52616-8GR2		CRANK	
P71-488	52618-13		BOLT	
P71-489	52621		NUT	
P71-490	52621-2		NUT	
P71-491			CASE AND BUSHING	
	52645-1GR6		CASE	
	8942-118		BUSHING	
P71-493	52627-3		HUB	
P71-494	52627-4		HUB	
P71-495	52627-5		HUB	
P71-496	52628-1		FLANGE	
P71-497	52629-1		HOUSING	
P71-498	52634 GR1		GEAR BOX	
P71-499	52637-4		ROD	
P71-500	52640 GR1		BEARING	
P71-501	52642		CASE	
P71-502	52644		COVER	
P71-504	52646-7GR1		SHAFT	

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ELECTRIC CAR RETARDERS - PARTS LIST

CAT.NO.	DRAWING NO. QTY	NAME	PG.
P71-505	52646-9GR1	SHAFT	
P71-506	52646-10GR1	SHAFT	
P71-509	52647-2GR2	PINION	
P71-510	52648 GR2	ROD	
P71-520	52658-2	SHAFT	
P71-521	52658-3	SHAFT	
P71-522	52658-4	SHAFT	
P71-523	52670-4	GEAR	
P71-524	52670-5	GEAR	
P71-525	52670-6	GEAR	
P71-526	52671-6	PINION	
P71-527	52671-7	PINION	
P71-528	52671-8	PINION	
P71-529	52672-62	SHOE	
P71-530	52672-63	SHOE	
P71-531	52672-70	SHOE	
P71-532	52672-83	SHOE	
P71-533	52680 GR1	EXTENSION	
P71-534	52681-4	SCREW	
P71-535	52688	CASE	
P71-536	52689	BEARING	
P71-537	52693	EYE	
P71-538	52765	NUT	
P71-539	52766-1	CAP	
P71-540	52767	SPACER	
P71-541	52768	SLEEVE	
P71-542	52769	PLATE	
P71-543	52769-1	PLATE	
P71-544	52779-3	NUT	
P71-545	52779-4	NUT	
P71-546	52804-15GR2	CONTROLLER	
P71-548	53349-10	SCREW	
P71-549	53429	HANDLE	
P71-550	53430-11GR5	BEAM COMP	
P71-551	53430-11GR6	BEAM COMP	
P71-552	53430-12GR2	BEAM	
P71-553	53430-14GR1	BEAM	
P71-554	53430-15GR1	BEAM	
P71-555	53430-16GR1	BEAM	
P71-556	53430-17GR1	BEAM	
P71-557	53431-11	BEAM	
P71-558	53431-12	BEAM	
P71-559	53432-44	NUT	
P71-560	53432-45	NUT	
P71-561	53432-42	NUT	
P71-562	53432-43	NUT	
P71-563	53435-12	LEVER	
P71-564	53435-13	LEVER	
P71-565	53437-8GR1	ANGLE BAR	
P71-566	53437-9GR1	ANGLE BAR	
P71-567	53437-10GR1	ANGLE BAR	
P71-568	53437-12GR1	ANGLE BAR	
P71-569	53437-14GR1	ANGLE BAR	
P71-570	53437-17GR1	CHANNEL BAR	
P71-571	53437-18GR1	CHANNEL BAR	
P71-572	53437-19GR1	CHANNEL BAR	
P71-573	53437-20GR1	CHANNEL BAR	
P71-574	53437-26GR1	ANGLE BAR	
P71-575	53437-27GR1	CHANNEL BAR	
P71-576	53437-28GR1	CHANNEL BAR	
P71-577	53438-28GR2	CROSS BAR	
P71-578	53438-30GR2	CROSS BAR	
P71-579	53440-2	SEAT	
P71-580	53440-3	SEAT	
P71-581	53443	EYE	
P71-582	53444 GR1	ROD	
P71-583	53447-1GR2	LEVER	
P71-584	53448-2	BRACKET	
P71-585	53448-3	BRACKET	
P71-586	53449-1GR2	STUD	
P71-587	53449 GR7	STUD	
P71-588	53449 GR9	STUD	
P71-589	53450-4GR1	OPERATING BAR	
P71-590	53450-4GR2	OPERATING BAR	
P71-591	53450-4GR3	OPERATING BAR	
P71-592	53450-4GR4	OPERATING BAR	
P71-593	53450-4GR7	OPERATING BAR	
P71-594	53450-5GR1	OPERATING BAR	
P71-595	53500-5	RESISTOR	
P71-600	53549-10	RESISTOR	
P71-601	01082-7	CONTACTOR	
P71-602	53642-41	SWITCH	

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ELECTRIC CAR RETARDERS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P71-603	53706-1GR2		CASE	
P71-604	36450-221		RELAY	
P71-605	54331		WRENCH	
P71-606	54331-6		WRENCH	
P71-607	54332		HANDLE	
P71-608	54332-1		HANDLE	
P71-609	54392-47		SCREW	
P71-610	54570		NUT	
P71-611	54901-2GR1		PIN	
P71-612	54997-1		TIMETACTOR	
P71-613	55015-1		LAG SCREW	
P71-614	55194-1GR1		BUSHING	
P71-615	55290-28		HEATER	
P71-616	55478-37GR1		BRACKET	
P71-617	55478-38GR1		BRACKET	
P71-618	55925-1GR8		BRAKE COMP.	
P71-619	55925-1GR9		BRAKE COMP.	
P71-620	55926-4		FRAME	
P71-621	55928-2		ARMATURE	
P71-622	55929-1		LEVER	
P71-623	55930-5		WHEEL	
P71-624	55932		LEVER	
P71-625	55933		LEVER	
P71-626	55934-2		PLATE	
P71-627	55935-1		ROD	
P71-628	55938		STRAP	
P71-629	55939		TRUNNION	
P71-630	56062-1		SCREW	
P71-631	56140-12		BLOCK	
P71-632	57992-1		RETAINER	
P71-633	58708-1GR1		BAIL	
P71-638	59791-25		ANGLE	
P71-639	59791-96		SHIM	
P71-640	59791-97		SHIM	
P71-641	59791-98		SHIM	
P71-642	55194-2GR2		BUSHING	
P71-651	01065-11		TRANSISTOR	
P71-652			RELAY P71-0652 COMP	
	36450-221		RELAY	
	55290-28		HEATER	
P71-653	29804-62		RECTIFIER	
P71-654	01065-12		RECTIFIER	32
P71-655	01106-10		MODULE	
P71-656	01106-7		MODULE	
P71-657	01106-8		MODULE	
P71-658	01106-9		MODULE	
P71-660	01065-13		RECTIFIER	
P71-670	54331-1		WRENCH	
P71-671	01106-11		MODULE	
P71-680	52804-14		CONTROLLER	
P71-690	80636-1GR1		WIRE (SPECIFY FEET)	
P71-692	07606-12		SCREW	
P71-693			PIN WITH FITTING REF 8	
	730-144		PIN	
	34232-17		FITTING	
P71-694	5190-7		BOLT	
P71-695	6971		PIN	
P71-696	16110-1		HASP	
P71-698	28262-67		ROD	
P71-699	29804-63		RECTIFIER	
P71-700	30804-3		STRAP	
P71-702	34254-2		SHIM	
P71-703	38165-46		SPACER	
P71-704	41673-87		SHIM	
P71-705	42333-49		NUT	
P71-706	46084-28		NUT	
P71-707	47754-273		BRACKET	
P71-708	52098-18GR1		BOARD	
P71-712			MOTOR WITH KIT	
	52595-31		MOTOR	
	17550-87GR2		KIT	
P71-713	52595-27GR1		MOTOR COMPLETE	
P71-714	52601-5GR2		MECHANISM	
P71-715	59799-5		RESISTOR	
P71-717			BOLT WALDRON-HARTIG DIV # 80-900 -06-0016	
P71-718			GASKET WALDRON-HARTIG DIV # 25-001 -12-9800	

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ELECTRIC CAR RETARDERS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P71-719			RING WALDRON-HARTIG DIV # 86-888 -12-0309	
P71-720			SEAL WALDRON-HARTIG DIV # 79-895 -12-0050	
P71-721			PLUG WALDRON-HARTIG DIV # 82-971 -00-0000	
P71-722			NUT WALDRON-HARTIG DIV # 81-950 -06-0000	
P71-723	52592-2		PLUG	
P71-724	52592-3		SEAL	
P71-725	52592-4		GASKET	
P71-726	52592-5		GASKET	
P71-727	52592-6		BOLT & NUT	
P71-728	18365		BRACKET	
P71-729	879-98		STUD	
P71-730	879-99		STUD	
P71-736	23456-7		LEVER	
P71-737	23455-4		BRACE	
P71-738	0293-26		NUT	
P71-740	56160-8		SCREW	
P71-741	52516-91		BOLT	
P71-742	56160-7		SCREW	
P71-743	9327-12		BLOCK	
P71-745	41673-69		SHIM	
P71-746	41673-70		SHIM	
P71-747	23457-6		FILLER	
P71-748	23457-8		FILLER	
P71-749	53436-48		BRACKET	
P71-750	068		SCREW	
P71-751	53762-53		TIEPLATE	
P71-752	23457-9		FILLER	
P71-753	626-223		WASHER	
P71-754	626-224		WASHER	
P71-755	626-225		WASHER	
P71-756	626-226		WASHER	
P71-757	626-227		WASHER	
P71-758	01138		HOSE	
P71-759	0541-2		SCREW	
P71-761	01136-1		VALVE	
P71-762	33526-3GR5		PIPE COMP	
P71-763	0699-20		TEE	
P71-764	35132-46		ELBOW	
P71-766	645-6		NUT	
P71-767	0770		SCREW	
P71-769	53436-47		BRACKET	
P71-771	53762-56		PLATE	
P71-772	01138-8		HOSE	
P71-773	33526-6GR2		PIPE COMP	
P71-774	33526-6GR3		PIPE COMP.	
P71-775	0699-31		TEE	
P71-776	641-69		CLAMP	
P71-777	062-7		SCREW	
P71-778	36183-58		GAUGE	
P71-779	23459-2		PEDESTAL	
P71-780	23457-7		FILLER	
P71-781	53436-51		BRACKET	
P71-782	53762-54		PLATE	
P71-783	33526-3GR6		PIPE COMP.	
P71-784	33526-3GR7		PIPE COMP.	
P71-785	53436-55		BRACKET	
P71-786	01137-17		CYLINDER	
P71-788	17550-87GR1		KIT	
P71-789	17550-88GR1		KIT	
P71-790	52672-99		SHOE	
P71-791	53438		CROSS BAR	
P71-792	50489-77		RESISTOR	
P71-793	19358-6GR1		SWITCH	
P71-801			JUNCTION BOX WITH COVER 12-3 A&H RE80126C	
P71-802			3-18 TEMPERATUR E & LEVEL GAUGE A&H RE80015C	
P71-803			3-17 THERMOMETE R 5004-02 A&H RE80014C	

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ELECTRIC CAR RETARDERS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P71-804			3-16 BREATHER 57XL-15 A&H RE80013C	
P71-805			3-14 LEVEL GAUGE 6580 -00165 A&H RE80011C	
P71-806			31-8 VALVE 145-1/4B A&H RE80020C	
P71-807			31-10 PRESSURE GAUGE AFC -3M-25-RC 0-30A&HPSI RE80064C	
P71-808			2-9 STREET TEE 12ST A&H RE80062C	
P71-809			2-16 AIR HOSE 3/4" X 8 1/2" LONG A&H RE80073C	
P71-810			3-10 ELBOW 16-12FPE W/ 16SPN X C A&H RE80068C	
P71-811			31-7 FILTER HH9500B16U PSAP A&H RE80007C	
P71-812			3-12 STREET ELBOW 1" 16SE BLACK IRON A&H RE80069C	
P71-813			31-2 PUMP PVR15 (1870-Y4545) A&H RE80003C	
P71-814			2-22 MALE ELL ADAPTER 3355-12 A&H RE80058C	
P71-815			31-6 CHECK VALVE 3/4" PUMP PRES LN A&H RE20012C	
P71-816			13-3 MOTOR GUARD A&H RE82024C	
P71-817			15-1 KNUCKLE A&H RE81026C	
P71-818			6-14 RETAINING RING FOR 6 -4P A&H RE80147C	
P71-819			13-4 LIMIT SWITCH COVER A&H RE82025C	
P71-820			6-4 CLEVIS SH662 A&H RE80051C	
P71-821			6-4P PIN FOR CLEVIS A&H RE80148C	
P71-822			13-5 BRACKET FOR CYL-INDER ROD AND LIMIT SWITCH ROD A&H RE82026C	

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ELECTRIC CAR RETARDERS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P71-823			6-3 JAM NUT FOR RAM A&H RE80149C	
P71-824			6-2 COLLAR FOR 3/4" SHAFT #15822 A&H RE80017C	
P71-825			13-8 BLEED OFF VALVE BV-2 A&H RE82028C	
P71-826			31-3 RAM 5" X 11" A&H RE80009C	
P71-827			14-11 ALUM ADAPTER PLATE A&H RE81028C	
P71-828			31-25 2" CONDULET C69 CH A&H RE80050C	
P71-829			31-31 ALUMINUM BOX W/ COVER A&H RE80043C	
P71-830			8-3 SOCKET HEAD CAP SCREW W/WASHER 3/4-10 X 1 -3/4" LONG A&H RE80103C	
P71-831			2-1 MOTOR 15 HP D-C A&H RE10016C	
P71-832			15-2 YOKE BRACKET ASSEMBLY A&H RE80146C	
P71-833			6-1 LIMIT SWITCH PL-1 A&H RE80016C	
P71-834			13-1 LIMIT SWITCH ROD A&H RE82022C	
P71-835			15-12 BRACKET ASSY 15-6 PIN A&H RE81027C	
P71-836			15-11 REAR CLEVIS PIN A&H RE80052C	
P71-837			15-10RETAINING RING FOR CLEVIS PIN A&H RE80145C	
P71-838			13-2 LIMIT SWITCH BRACKET A&H RE82023C	
P71-839			HEX NUT 1/4"-20 A&H RE80099C	
P71-840			SCREW 1/4" -20 X 1" A&H RE80098C	
P71-841			WASHER 1/4" FLAT CAD PLATED A&H RE80097C	
P71-842			6-10 MALE ELL ADAPTER 3405-12 A&H RE80066C	

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ELECTRIC CAR RETARDERS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P71-843			31-12 RAM CYLINDER HOSE A&H RE80075C	
P71-844			31-20 CABLE W/ 8 -PIN FEMALE CONNECTOR A&H RE80032C	
P71-845			31-23 CABLE CONNECTOR FOR 3/4" BUSHING A&H RE80037C	
P71-846			31-24 BUSHING 3/4" A&H RE80036C	
P71-847			8-9 EYE BOLT A&H RE80100C	
P71-848			3-27 BUSHING 12 -4HB A&H RE80063C	
P71-849			3-15 MAGNETIC TANK CLEANER A&H RE80012C	
P71-850			2-8 MALE ADAPTER A&H RE80061C	
P71-851			3-9 STREET ELBOW 3/4" BLACK IRON A&H RE80067C	
P71-852			2-12 HOSE BARBS FOR 3/4" HOSE A&H RE80071C	
P71-853			2-14 CLAMP FOR HOSE A&H RE80141C	
P71-854			14-8 BRACKET ASSEMBLY FOR FILTER A&H RE80128C	
P71-855			2-13 HOSE BARBS FOR 1" HOSE A&H RE80072C	
P71-856			2-17 HOSE 1" X 11" LONG A&H RE80074C	
P71-857			31-9 BALL VALVE 1 1/4 A&H RE80008C	
P71-858			3-28 STREET ELBOW 1" 45 DEGREE A&H RE80070C	
P71-859			31-1 CONTROL VALVE VS35M-3A-3M-70 A&H RE80001C	
P71-860			VALVE SUBPLATE WITH BOLTS MVS353 W/DVS35 A&H RE80002C	

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ELECTRIC CAR RETARDERS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P71-861			3-4 STREET ELBOW 1" MALE THD. 3/4" FEMALE THD. A&H RE80059C	
P71-862			3-8 DRESSER ELL A&H RE20015C	
P71-863			7-1 BASE PLATE FOR A-C OR D-C MOTOR A&H RE80018C	
P71-864			4-14 HOUSING COVER FOR AIR FILTER A&H RE80152C	
P71-865			4-15 AIR INLET VENT A&H RE80153C	
P71-866			3-29 HOSE BARB FOR 1 1/4" HOSE A&H RE80139C	
P71-867			3-31 CLAMP FOR 1 1/4" HOSE A&H RE80142C	
P71-868			31-15 HOSE FOR PUMP A&H RE80076C	
P71-869			31-17 CABLE W/ 3 -PIN CONNECTOR A&H RE80029C	
P71-870			31-18 CABLE W/ 2 -PIN CONNECTOR A&H RE80030C	
P71-871			3-30 HOSE 1 1/4" FOR PUMP INLET A&H RE80140C	
P71-872			4-1 HOUSING FOR AIR FILTER A&H RE80150C	
P71-873			4-8 AIR FILTER A&H RE80151C	
P71-874			5-1 MOTOR 15 HP AC A&H RE10015C	
P71-885			HCE-4 RAM SEAL KIT 5" X 11" A&H RE20100C	
P71-886			HCE-4 ROD SCRAPER 3 1/2 ROD A&H RE20101C	
P71-887			HCE-4 ROD BEARING A&H RE20102C	
P71-942	52618-9		BOLT	

CATALOG SECTION P73
PARTS LIST
Color-Light Signals
Type D

FOR ASSEMBLIES, SEE CATALOG SEC. 73

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GENERAL RAILWAY SIGNAL COMPANY

A UNIT OF GENERAL SIGNAL CORPORATION

ROCHESTER NEW YORK 14602

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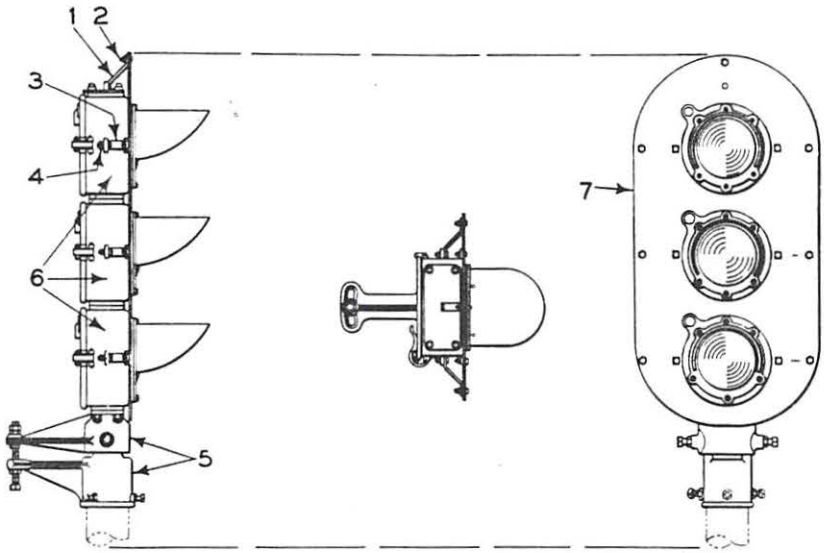
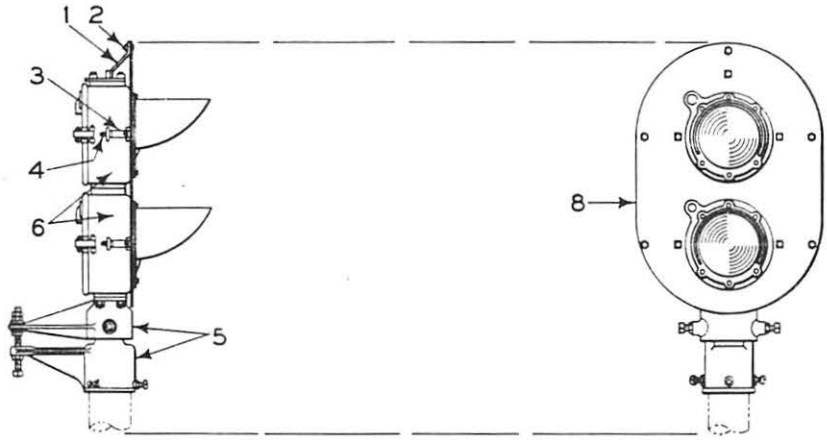
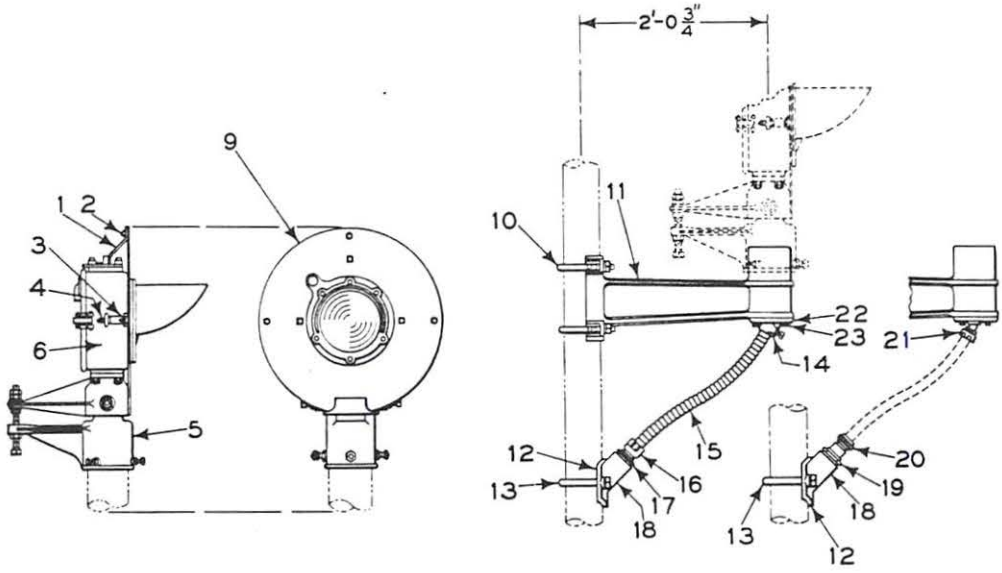






Type D signal.

Type D Signal
Parts List

Order by catalog number and name shown in bold type

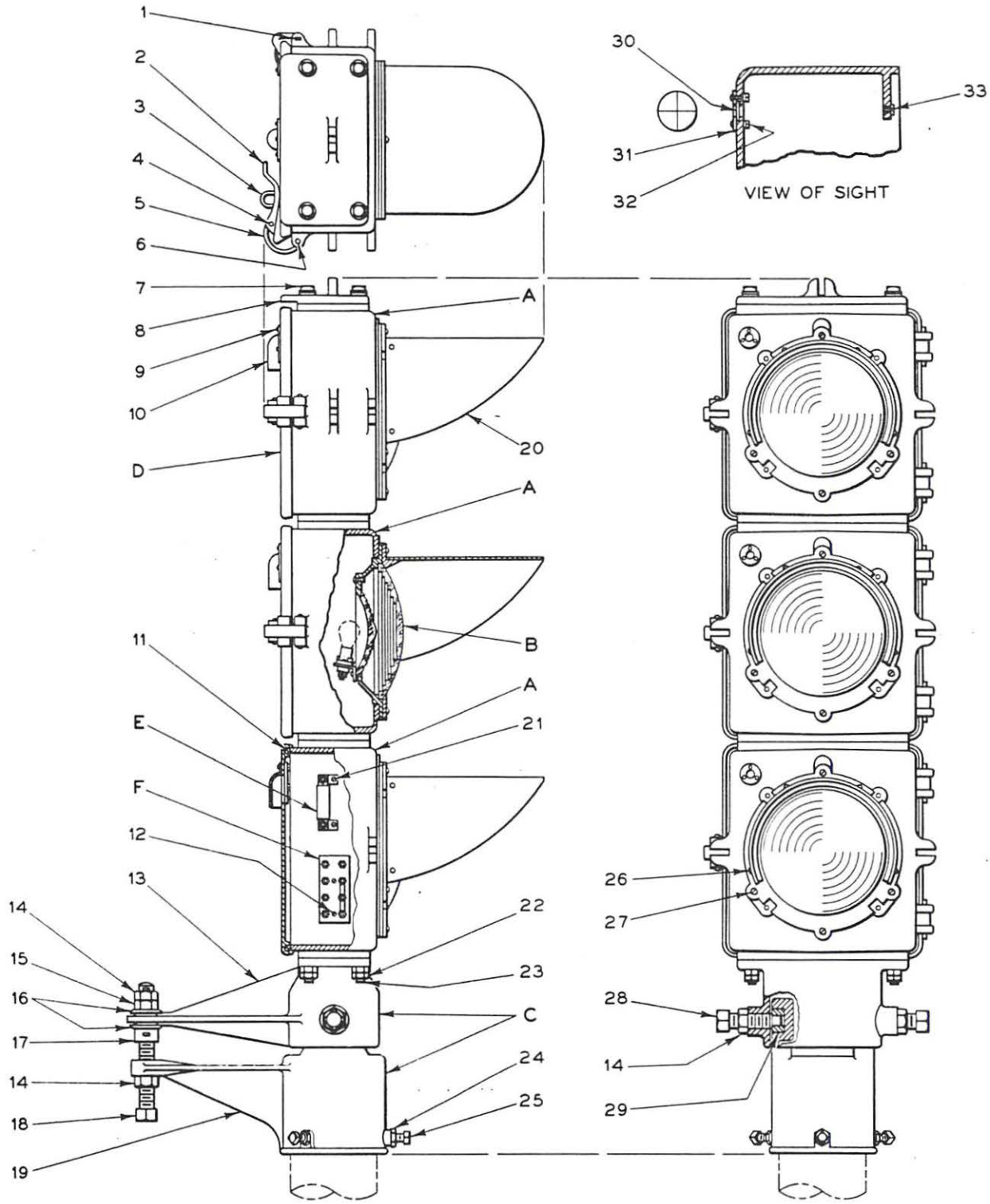
REF.	NAME	CATALOG NUMBER
1.	BRACE, for top of background	P73-127
2	SCREW, for fastening braces Refs. 1 and 3 to background	P73-195
2A	NUT, for above	P73-108
2B	WASHER, for above	P73-178
3	BRACE, for sides of background	P73-126
4	SCREW, for fastening braces Refs. 1 and 3 to signal case	P73-285
4A	NUT, for above	P73-108
4B	WASHER, for above	P73-178
5	BRACKET, adjusting, for references see page 6	
6	CASE COMPLETE, for references see page 6	
7	BACKGROUND COMPLETE, for three-unit signal, includes all mounting parts	P73-297
7A	BACKGROUND, only	P73-290
8	BACKGROUND COMPLETE, for two-unit signal, includes all mounting parts	P73-298
8A	BACKGROUND, only	P73-291
9	BACKGROUND COMPLETE, for one-unit signal, includes all mounting parts	P73-299
9A	BACKGROUND, only	P73-292
10	U BOLT, for 5" mast	P73-196
10A	NUT, for above	P91-220
10B	WASHER, for above	P73-203
10C	WASHER, lock, for above	P91-223
11	BRACKET COMPLETE, for use when signal units are mounted in front or side of mast. Includes 60 degree coupling for 1 1/2" flexible conduit, also includes U bolts, nuts and washers for attaching to five-inch mast	A73-161
11A	As above, except with 45 degree coupling, for 3/4" to 7/8" dia. cable	A73-165
11B	Same as Ref. 11, except for 7/8" to 1.0" dia. cable	A73-167
11C	Same as Ref. 11, except for 1.0" to 1 3/16" dia. cable	A73-169
12	GASKET, for coupling Ref. 18	P76-277
13	U BOLT, for coupling Ref. 18	P76-294
13A	NUT, for above	P85-204
13B	WASHER, for above	P76-201
13C	WASHER, lock, for above	P81-104
14	COUPLING, for 1 1/2" flexible conduit	P73-260

Type D Signal
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
15	CONDUIT, 1 1/2" flexible, length 3'	A85-868
16	COUPLING, for 1 1/2" flexible conduit, has 1 1/2" threads	A85-866
17	REDUCER, 2" to 1 1/2"	P76-253
18	COUPLING, for 5" mast, has 2" threads	P76-365
19	REDUCER, 2" to 1"	P76-252
19A	As above, except 2" to 1 1/4"	P76-331
20	CONNECTOR, straight, for 3/4" to 7/8" dia. cable, has 1" threads.	P76-358
20A	As above, except for 7/8" to 1.0", has 1 1/4" threads	P76-460
20B	Same as Ref. 20 except for 1.0" to 1 3/16" dia. cable, has 1 1/4" threads	P76-461
21	CONNECTOR, 45 degree, for 3/4" to 7/8" dia. cable, has 1" threads	P76-353
21A	CONNECTOR, 45 degree, for 7/8 to 1" dia. cable, has 1 1/4" threads	P76-359
21B	CONNECTOR, 45 degree, for 1" to ' 3/16" dia. cable, has 1 1/4 threads	P76-352
21C	NUT, lock, for connectors, Ref. 21	P73-118
21D	NUT, lock, for connectors, Refs. 21A and 21B	P73-183
22	PLATE, for bracket, Ref. 11A, has 1 3/8" dia. hole	P73-145
22A	As above except for brackets Refs. 11B and 11C, has 1 11/16" dia. hole	P73-146
23	SCREW, for plate Ref. 22	P73-158
23A	WASHER, lock, for above	P65-167

Memoranda



Type D signal.

Type D Signal
Parts List

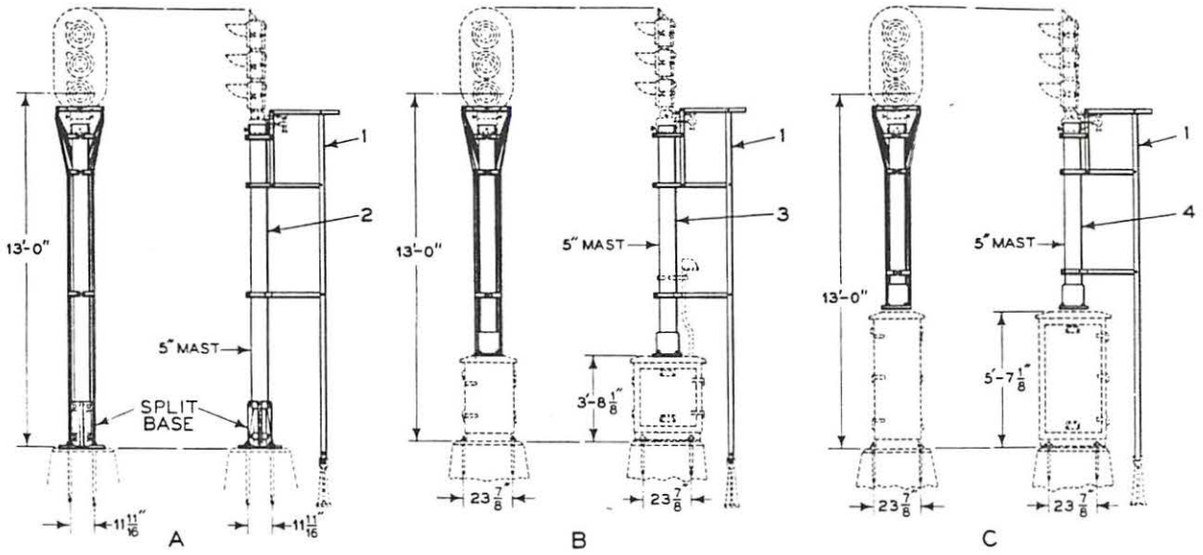
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	CASE COMPLETE, includes door, ventilator and hasp parts, not drilled for terminal block or resistor	P73-184
A1	As above, except drilled for terminal block only	P73-185
A2	Same as Ref. A, except drilled for terminal block and resistor	P73-186
B	LENS UNIT COMPLETE, for reference see page 16	
C	BRACKET COMPLETE, adjustable	P73-270
D	DOOR COMPLETE, includes ventilator and staples	P73-164
E	RESISTANCE UNIT COMPLETE, 1.75 amps., 2 ohms	P73-353
F	TERMINAL BLOCK COMPLETE, 3-way, without connector for references see Section 3	P73-263
F1	As above, except 4-way	P73-264
F2	Same as Ref. F, except with connectors.	P73-265
F3	Same as Ref. F1 except with connectors.	A3-130
1	COTTER, hinge, for door	P91-232
2	HASP, for door	P81-165
3	STAPLE, for door	P85-312
4	PIN, for fastening hasp to strap	P73-129
5	STRAP, for hasp	P73-197
6	PIN, for fastening strap to case	P73-113
7	BOLT AND NUT, for fastening plate Ref. 8 to case also for fastening units together.	P73-234
8	PLATE, for top of signal.	P73-210
8A	WASHER, lead, for above	P50-738
9	SCREW, for mounting ventilator	P50-249
10	VENTILATOR, for door	P50-205
10A	PLATE, for screen.	P50-206
10B	SCREEN, for ventilator	P50-207
11	GASKET, 4 feet long. Specify number feet	P76-132
12	SCREW, for mounting terminal block	P65-207
12A	WASHER, lock, for above	P76-145
13	BRACKET, upper	P73-209
14	NUT, for screws Refs. 18 and 28	P73-111
15	NUT, for screw Ref. 18	P73-112
16	WASHER, for screw Ref. 18.	P73-150
17	NUT, for screw Ref. 18	P73-172
18	SCREW, adjusting	P73-134
19	BRACKET, lower	P73-208

GENERAL RAILWAY SIGNAL COMPANY

December 1962

Type D Signal
Parts List



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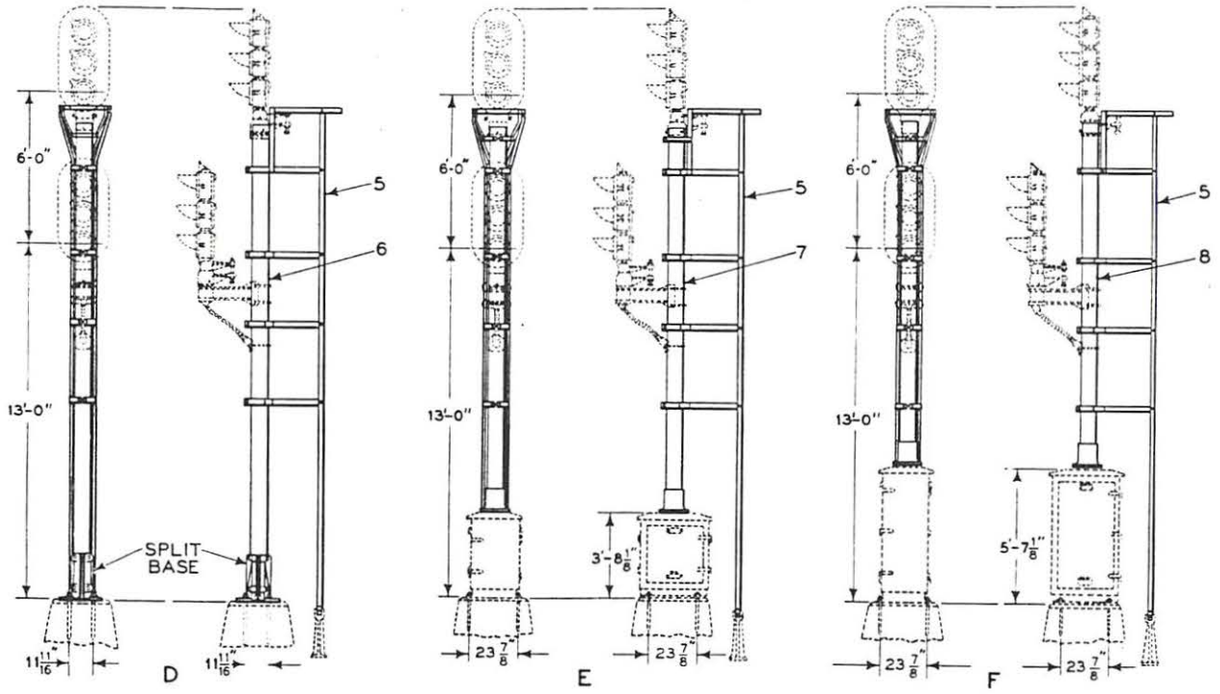


Masts and ladders.

Type D Signal
Parts List

Order by catalog number and name shown in bold type

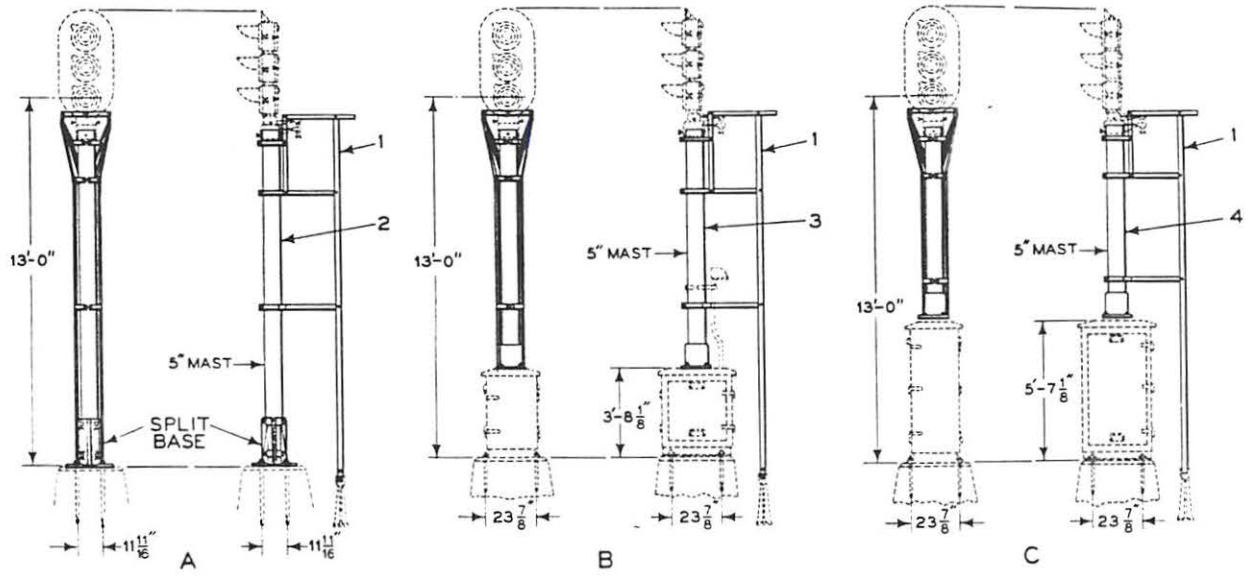
REF.	NAME	CATALOG NUMBER
A	CASE COMPLETE, includes door, ventilator and hasp parts, not drilled for terminal block or resistor	P73-184
A1	As above, except drilled for terminal block only	P73-185
A2	Same as Ref. A, except drilled for terminal block and resistor	P73-186
B	LENS UNIT COMPLETE, for reference see page 16	
C	BRACKET COMPLETE, adjustable	P73-270
D	DOOR COMPLETE, includes ventilator and staples	P73-164
E	RESISTANCE UNIT COMPLETE, 1.75 amps., 2 ohms	P73-353
F	TERMINAL BLOCK COMPLETE, 3-way, without connector for references see Section 3	P73-263
F1	As above, except 4-way	P73-264
F2	Same as Ref. F, except with connectors.	P73-265
F3	Same as Ref. F1 except with connectors.	A3-130
1	COTTER, hinge, for door	P91-232
2	HASP, for door	P81-165
3	STAPLE, for door	P85-312
4	PIN, for fastening hasp to strap	P73-129
5	STRAP, for hasp	P73-197
6	PIN, for fastening strap to case	P73-113
7	BOLT AND NUT, for fastening plate Ref. 8 to case also for fastening units together.	P73-234
8	PLATE, for top of signal.	P73-210
8A	WASHER, lead, for above	P50-738
9	SCREW, for mounting ventilator	P50-249
10	VENTILATOR, for door	P50-205
10A	PLATE, for screen.	P50-206
10B	SCREEN, for ventilator	P50-207
11	GASKET, 4 feet long. Specify number feet	P76-132
12	SCREW, for mounting terminal block	P65-207
12A	WASHER, lock, for above	P76-145
13	BRACKET, upper	P73-209
14	NUT, for screws Refs. 18 and 28	P73-111
15	NUT, for screw Ref. 18	P73-112
16	WASHER, for screw Ref. 18.	P73-150
17	NUT, for screw Ref. 18	P73-172
18	SCREW, adjusting	P73-134
19	BRACKET, lower	P73-208

Type D Signal
Parts List

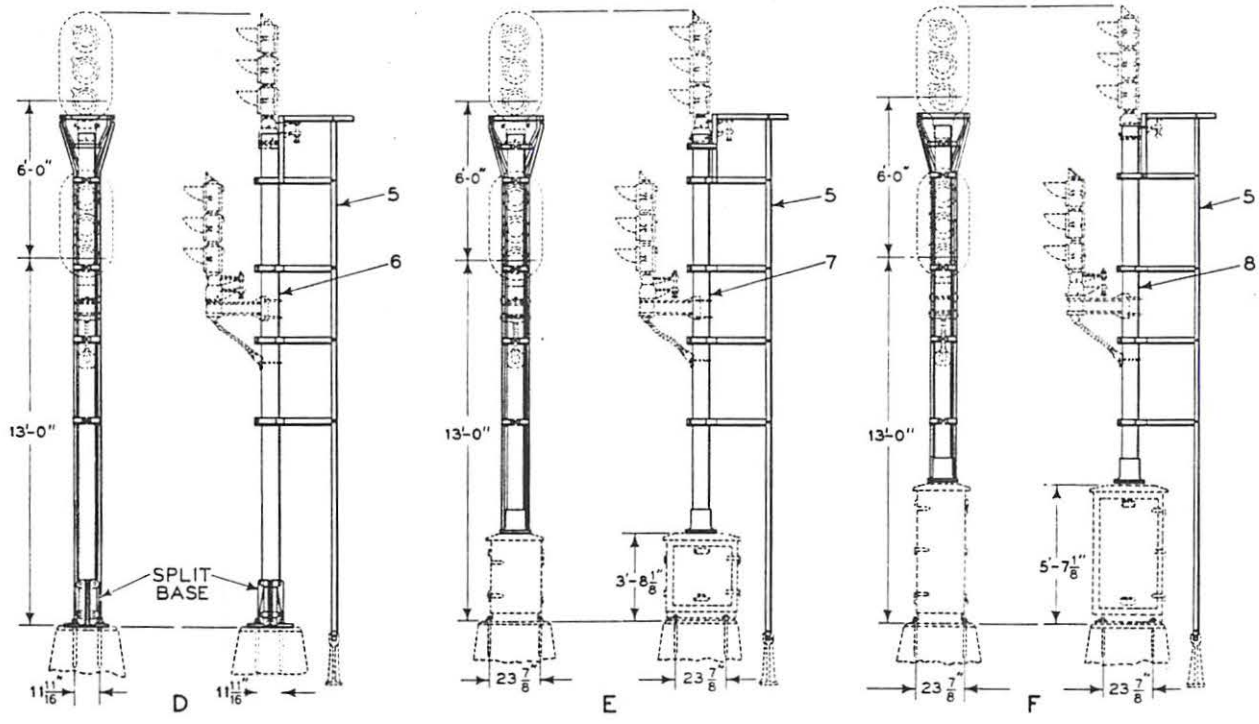
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
20	HOOD	P73-286
21	SCREW, for mounting resistance unit	P85-233
21A	WASHER, lock, for above	P62-402
22	NUT, lock, for bolt Ref. 23	P73-300
23	BOLT AND NUT, for fastening signal to adjusting bracket	P73-122
24	NUT, for screw Ref. 25	P73-235
25	SCREW, for locking signal to mast	P73-278
26	SCREW, for fastening hood to lens unit	P65-839
26A	NUT, for above	P73-230
26B	WASHER, lock, for above	P85-390
27	SCREW, for fastening lens unit to case	P73-120
27A	WASHER, lock, for above	P73-236
28	SCREW, for locking adjustment	P73-133
29	BLOCK, for screw Ref. 28	P73-302
30	GLASS, for sight	P73-115
31	RING, bezel for glass	P73-239
32	SCREW, for bezel	P73-130
32A	NUT, for above	P65-211
32A	WASHER, lock, for above	P73-276
33	PLUG, sighting	P73-303

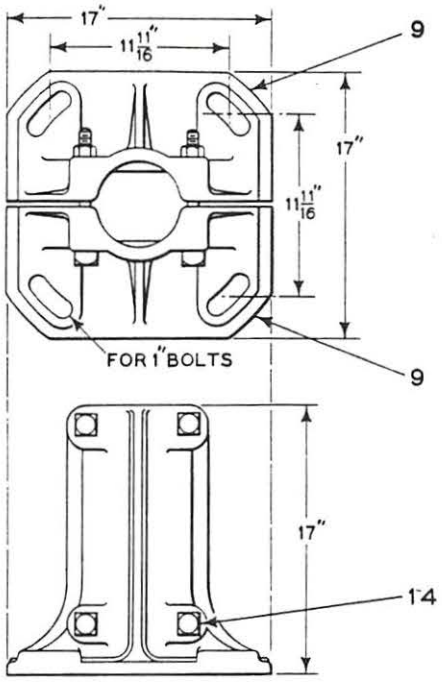
Memoranda



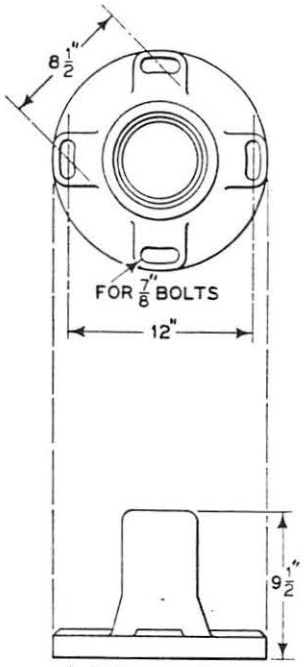
(ALL MAST HEIGHTS ARE APPROXIMATE)



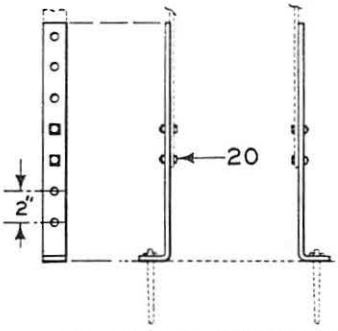
Masts and ladders.



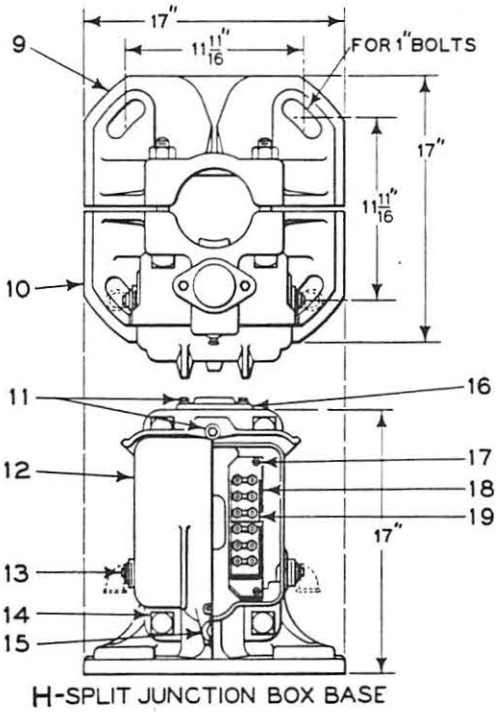
G-SPLIT BASE



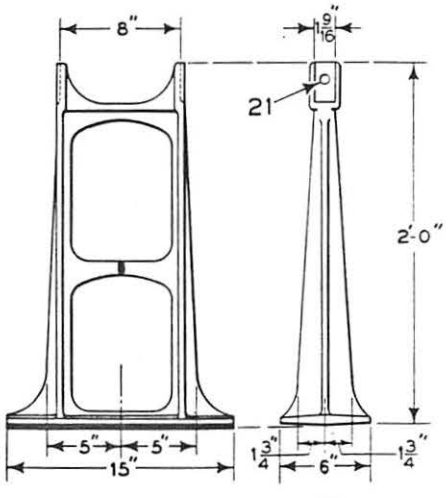
J-SOLID BASE
FOR CASE MOUNTING



K-LADDER SUPPORTS



H-SPLIT JUNCTION BOX BASE



M-LADDER FOUNDATION

Bases and ladder foundations.

Mast Assemblies

Masts listed below and shown on page 10 are five-inch inside diameter. They are drilled for the signal arrangements shown and come complete with base, ladder, and platform assembly. For foundation bolts, see Catalog Section 3.

To order, specify "Mast Assembly" and give catalog number

REF.	DRILLED FOR SIGNAL HEADS	TYPE OF BASE (See Page 11)	CATALOG NUMBER
A	None	Split	A73-181
A1	"	Split Junction Box	A73-183
*B	"	Solid	A73-185
*C	"	"	A73-187
D	One	Split	A73-189
D1	"	Split Junction Box	A73-191
*E	"	Solid	A73-193
*F	"	"	A73-195

* DOES NOT INCLUDE INSTRUMENT CASE. SEE CATALOG SECTION 5, AND ORDER SEPARATELY

Poles, Bases and Ladder Foundations

Parts List

Order by catalog number and name shown in bold type

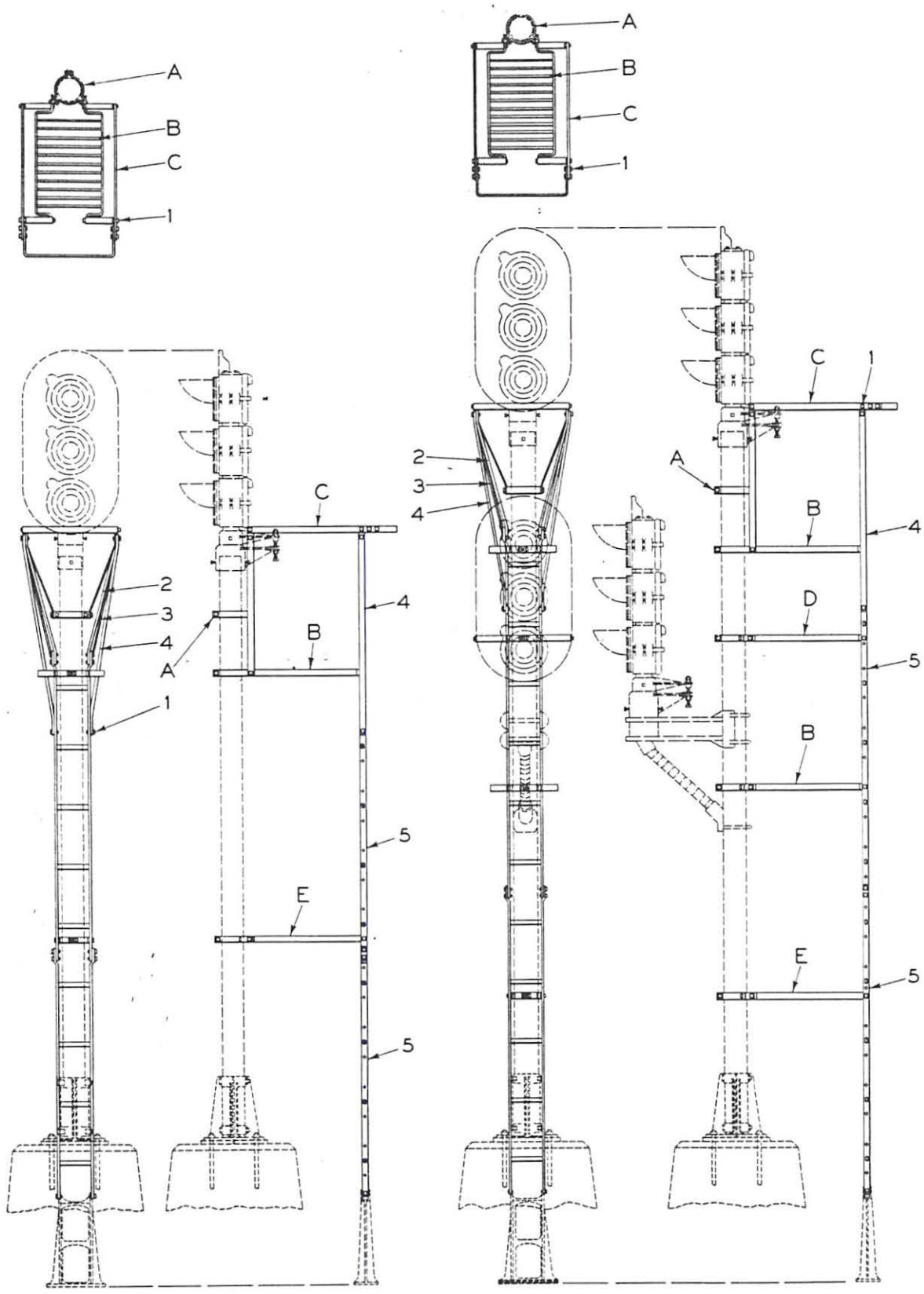
REF.	NAME	CATALOG NUMBER
G	BASE COMPLETE, split, for 5" mast	P76-340
H	BASE COMPLETE, split junction box, with twenty-four terminal posts, for 5" mast	P76-339
J	BASE, solid, for 5" mast, for case mounting	P76-322
K	SUPPORT, ladder, adjustable, for use when ladder is to be fastened directly to flat surface, includes bolts and nuts for attaching to ladder	A76-325
M	FOUNDATION, for ladder, includes bolts and nuts	A76-327
1	LADDER COMPLETE, for masts Refs. A, A1, B and C	P73-102
2	POLE, only, for mast Refs. A and A1	P73-199
3	POLE AND BASE, for mast Ref. B	P73-281
4	POLE AND BASE, for mast Ref. C	P73-282
5	LADDER COMPLETE, for masts Refs. D, D1, E and F	P73-104
6	POLE, only, for masts Refs. D and D1	P73-198
7	POLE AND BASE, for mast Ref. E	P73-280
8	POLE AND BASE, for mast Ref. F	P73-283
9	HALF BASE, for Refs. G and H	P76-343
10	HALF BASE, with junction box	P76-344

Poles, Bases and Ladder Foundations

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
11	BOLT, for fastening cover and cap to base	P76-206
11A	WASHER, lock, for above	P81-122
12	COVER, for base Ref. H	P76-361
13	REDUCER, 1-1/2" to 3/4"	P76-250
13A	VENTILATOR	P76-388
13B	PLUG, pipe	P76-207
14	BOLT, for clamping base to mast	P76-368
14A	NUT, for above	P76-245
15	SCREW, thumb, for cover Ref. 12	P76-471
15A	NUT, jam, for above	P76-275
16	CAP, for Ref. H	P76-316
17	SCREW, for mounting plate Ref. 18	P76-362
17A	WASHER, lock, for above	P76-505
18	PLATE, for terminal blocks	P76-470
19	TERMINAL BLOCK COMPLETE, with twelve posts and connectors	A3-127
20	BOLT AND NUT, for Ref. K	P76-200
21	BOLT AND NUT, for Ref. M	P76-202



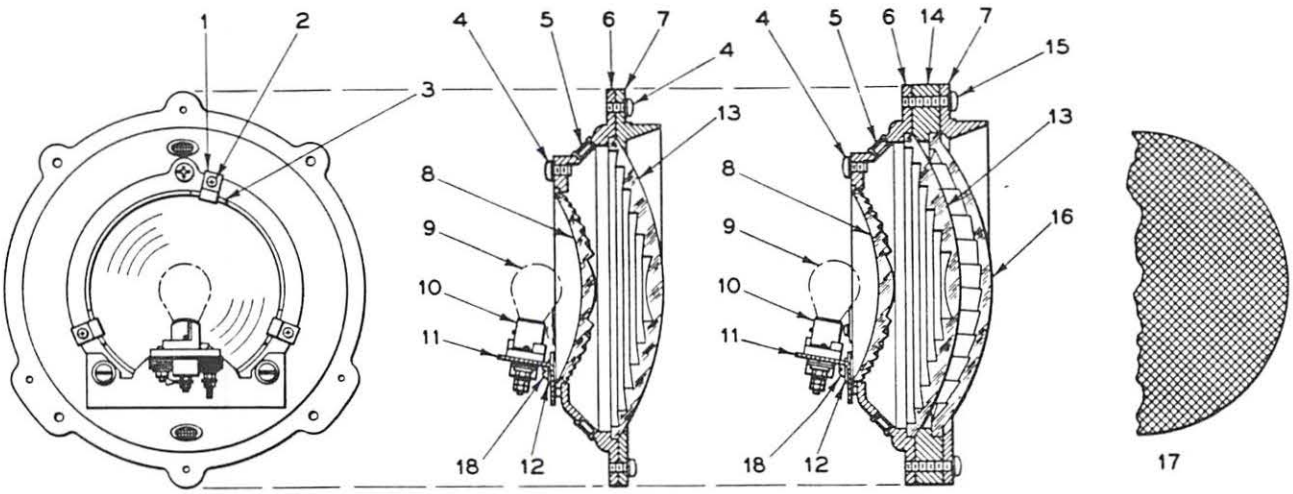
Ladder parts.

Ladder Parts

For Ground, Bracket or Bridge Signals
For 5" Dia. Masts

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	CLAMP COMPLETE	P76-227
B	PLATFORM COMPLETE	P76-216
C	HANDRAIL COMPLETE, top, includes clamp and clamp braces	P73-101
D	HANDRAIL COMPLETE, intermediate, includes clamp	P76-225
E	STAY COMPLETE, includes clamp	P76-226
1	BOLT AND NUT, for ladder sections, platforms, stays, etc.	P76-200
2	BRACE	P76-229
3	BRACE	P73-105
4	BRACE	P76-228
5	LADDER, only, 4'-0-1/2" long (3 treads)	P76-210
5A	As above, except 5'-3-'/2" long (4 treads)	P76-211
5B	Same as Ref. 5 except 6'-6-1/2" long (5 treads)	P76-212
5C	Same as Ref. 5 except 7'-9-1/2" long (6 treads)	P76-213
5D	Same as Ref. 5 except 10'-3-1/2" long (8 treads)	P76-214
5E	Same as Ref. 5 except 19'-0-1/2" long (15 treads)	P76-215



Lens Units

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	LENS UNIT COMPLETE, for tangent track, with 5-1/2" dia., green inner lens and 8-3/8" dia., clear, outer lens with 40 degree deflecting bullseye	A73-210
A1	As above, except with yellow inner lens	A73-211
A2	Same as Ref. A, except with red inner lens	A73-212
B	LENS UNIT COMPLETE, for curved track, with 5-1/2" dia. green inner lens and 8-3/8" dia., clear, outer lens unit 40 degree deflecting bullseye and 20 degree deflecting roundel to right	A73-215
B1	As above, except with 20 degree, deflecting roundel to left	A73-220
B2	LENS UNIT COMPLETE, for curved track, with 5-1/2" dia., yellow inner lens and 8-3/8" dia., clear, outer 20 degree deflecting roundel to right.	A73-216
B3	Same as Ref. B2, except with 20 degree deflecting roundel to left.	A73-222
B4	LENS UNIT COMPLETE, for curved track, with 5-1/2" dia., red inner lens and 8-3/8" dia., clear, outer 20 degree deflecting roundel to right	A73-217
B5	Same as Ref. B4, except with 20 degree deflecting roundel to left.	A73-223
B6	LENS UNIT COMPLETE, for curved track, with 5-1/2" dia., green inner lens and 8-3/8", clear, outer 30 degree Spredlite roundel	A73-225
B7	Same as Ref. B6, except with yellow inner lens	A73-226
B8	Same as Ref. B6, except with red inner lens	A73-227
1	CLIP, for inner lens	P73-177
2	SCREW, for clips	P73-132
2A	WASHER, lock, for above	P62-401
3	SHIM, for clips	P73-343

Lens Units
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
4	SCREW, for fastening rings together	P73-180
4A	WASHER, lock, for above, used with mounting rings	P85-801
5	VENTILATOR	P76-380
6	RING	P73-246
7	RING, bezel	P73-249
8	LENS, inner, 5-1/2" dia., green	P73-254
8A	As above, except yellow	P73-255
8B	Same as Ref. 8, except red	P73-256
9	INCANDESCENT LAMP, see Section 46, for ordering information	
10	RECEPTACLE COMPLETE, for references see page 32	P73-312
11	BRACKET, for mounting receptacle	P73-342
12	WASHER, for screw Ref. 4, when mounting bracket Ref. 11	P73-163
13	LENS, outer, 8-3/8" dia. clear, 4" focus, with 40 degree deflecting bullseye	P73-253
14	RING, adapter	P73-247
15	SCREW, for adapter and rings	P73-124
15A	WASHER, lock, for above.	P85-801
16	ROUNDEL, 8-3/8" dia., clear, 20 degree deflecting	P76-111
16A	As above, except 30 degree Spredlite	P76-147
17	DISC, antiphan	A73-205
18	SCREW, for mounting bracket Ref. 11	P73-427
	COMPOUND GASKET, 1/2 lb. for use in assembling outer lenses and roundels	P73-182

Memoranda

CATALOG SECTION P73
PARTS LIST
Color-Light Signals
Type G

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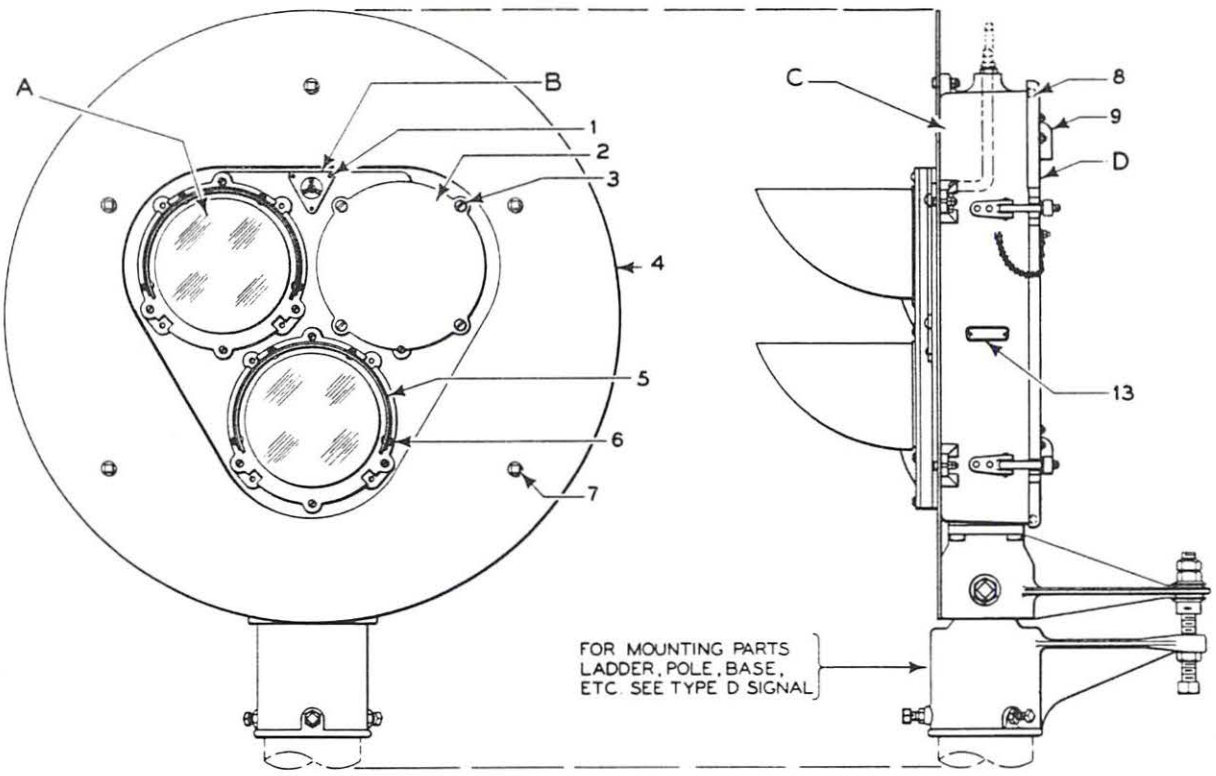
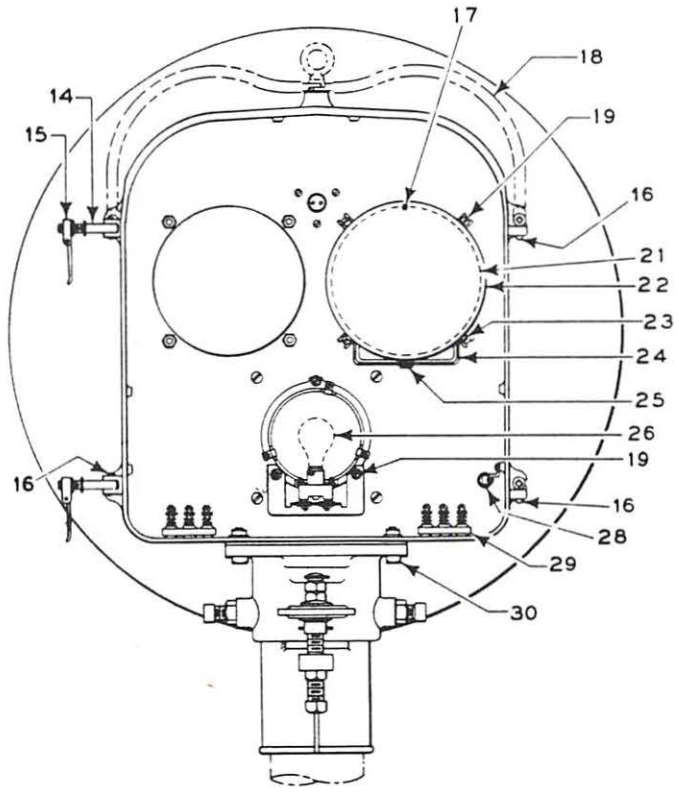
Ladders	see Type D Signals
Ladder Supports	see Type D Signals
Lens Units	26
Poles	see Type D Signals
Signal Units	22

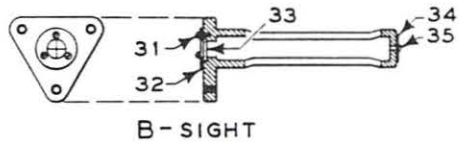
GENERAL RAILWAY SIGNAL COMPANY
A UNIT OF GENERAL SIGNAL
ROCHESTER NEW YORK 14602

PRINTED IN U.S.A.

July 1969







Type G signal.

Type G Signal

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	LENS UNIT COMPLETE, for references see page 26	
B	SIGHT COMPLETE, with 1/2" dia., opening	P73-407
C	CASE COMPLETE, includes door, sighting device and terminal blocks	P73-380
D	DOOR COMPLETE, includes ventilators	P73-374
1	SCREW, for mounting sight	P50-132
1A	WASHER, lock, for above	P81-121
2	DISC, for blanking lens opening	P73-396
3	SCREW, for fastening disc to case	P73-377
3A	NUT, for above	P81-127
3B	WASHER, lock, for above	P81-122
4	BACKGROUND COMPLETE, includes mounting hardware	P73-404
5	HOOD	P73-286
6	SCREW, for mounting hood	P65-839
6A	NUT, for above	P76-129
6B	WASHER, lock, for above	P85-390
7	BOLT, for mounting background	P73-403
7A	NUT, 7/32" thick, for above	P71-356
7B	WASHER, for above	P85-50
8	GASKET, 7'-10" long, for door, specify number of feet	P76-132
9	VENTILATOR, for door	P50-205
9A	PLATE, for above	P50-206
9B	SCREEN, for above	P50-207
9C	SCREW, for above	P50-249
12	SCREW, for hood	P65-839
12A	WASHER, lock, for above	P85-390
13	NAME PLATE	P73-363
13A	SCREW, for above	P73-411
14	EYEBOLT, for door	P73-400
15	HASP, for door	P73-376
16	ROLL PIN, for eyebolt, also hinge for door	P76-117
16A	WASHER, for above	P85-221
17	SCREW, for fastening cover to shield	P73-370
18	HANDLE, grab	P73-413
19	SCREW, for mounting lens units and shield	P73-361
19A	WASHER, for above	P85-221

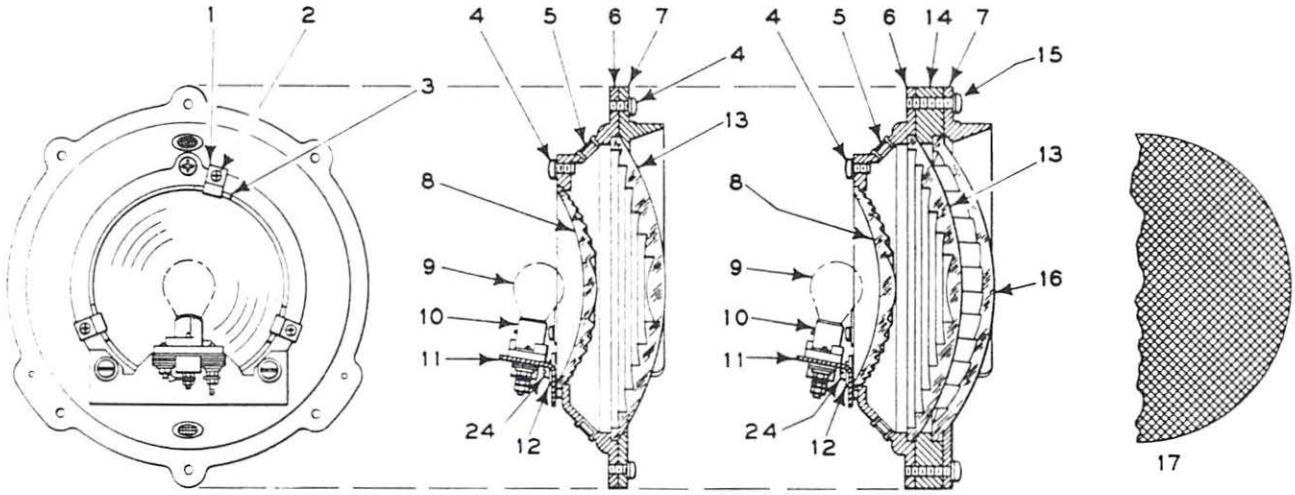
Type G Signal

Parts List

Order by catalog number and name shown in bold type

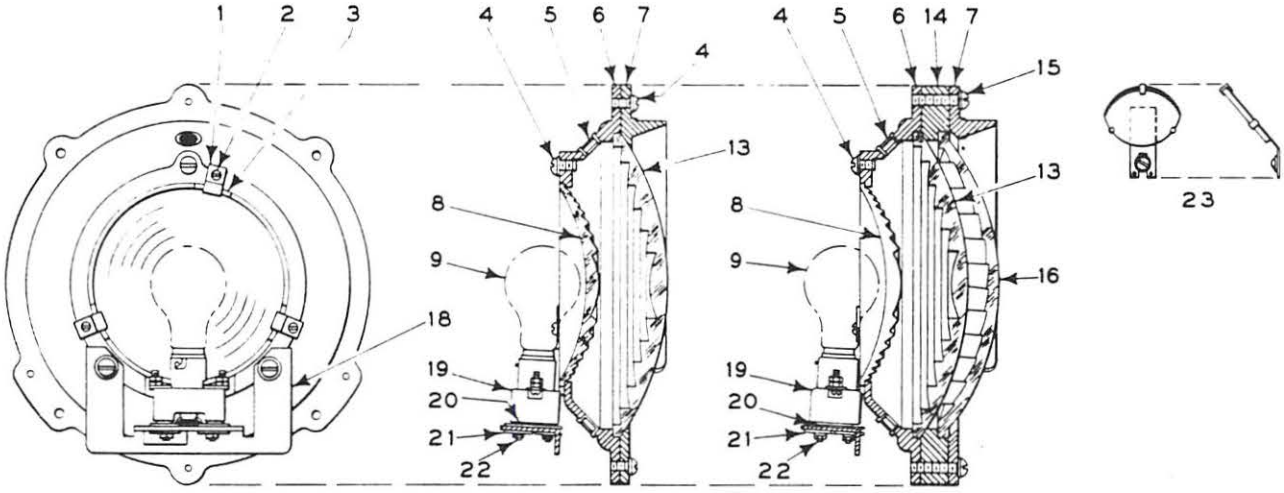
REF.	NAME	CATALOG NUMBER
19B	WASHER, lock, for above	P81-122
21	SHIELD	P73-405
22	COVER, for shield	P73-410
23	SCREW, for fastening shield Ref. 24 to shield Ref. 21	P65-200
23A	NUT, for above.	P73-230
23B	WASHER, for above	P76-247
23C	WASHER, lock, for above	P85-390
24	SHIELD	P73-406
25	BUSHING, for shield	P73-369
26	INCANDESCENT LAMP, see Section 46, for ordering information	
28	RESISTANCE UNIT COMPLETE, 1.75 amps., 2 ohms.	P73-353
28A	SCREW, for above	P62-174
28B	WASHER, lock, for above	P62-402
29	TERMINAL BLOCK COMPLETE, 3-way, with connectors, for references see Section 3	
30	BOLT, with sq. nut, for fastening signal to bracket	P73-360
30A	WASHER, lock, for above	P50-401
31	SCREW, for bezel ring	P73-367
31A	WASHER, lock, for above	P73-275
32	RING, bezel	P73-239
33	GLASS, only	P73-115
34	DISC	P73-397
35	SCREW, for disc	P73-412

Memoranda



A-FOR TANGENT TRACK B-FOR CURVED TRACK

FOR BAYONET BASE LAMPS



C-FOR TANGENT TRACK D-FOR CURVED TRACK

FOR REBASED LAMPS

Lens units.

Type G Signal – Lens Units

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	LENS UNIT COMPLETE, for bayonet base lamp, for tangent track, with 5-1/2" dia., green inner lens and 8-3/8" dia., clear, outer lens with 40 degree deflecting bullseye	A73-210
A1	As above, except with yellow inner lens	A73-211
A2	Same as Ref. A, except with red inner lens	A73-212
B	LENS UNIT COMPLETE, for bayonet base lamp, for curved track, with 5-1/2" dia. green inner lens and 8-3/8" dia., clear, outer lens with 40 degree deflecting bullseye and 20 degree deflecting roundel to right	A73-215
B1	As above, except with 20 degree, deflecting roundel to left	A73-220
B2	LENS UNIT COMPLETE, for bayonet base lamp, for curved track, with 5-1/2" dia., yellow inner lens and 8-3/8" dia., clear, outer lens with 40 degree deflecting bullseye and 20 degree deflecting roundel to right	A73-216
B3	Same as Ref. B2, except with 20 degree deflecting roundel to left . .	A73-222
B4	LENS UNIT COMPLETE, for bayonet base lamp, for curved track, with 5-1/2" dia., red inner lens and 8-3/8" dia., clear, outer lens with 40 degree deflecting bullseye and 20 degree deflecting roundel to right	A73-217
B5	Same as Ref. B4, except with 20 degree deflecting roundel to left . .	A73-223
B6	LENS UNIT COMPLETE, for bayonet base lamps, for curved track, with 5-1/2" dia., green inner lens and 8-3/8", clear, outer lens with 40 degree deflecting bullseye and 30 degree Spredlite roundel. .	A73-225
B7	Same as Ref. B6, except with yellow inner lens.	A73-226
B8	Same as Ref. B6, except with red inner lens	A73-227
C	LENS UNIT COMPLETE, for 3 pin rebased lamp, for tangent track, with 5-1/2" dia., green inner lens and 8-3/8" dia., clear, outer lens with 40 degree deflecting bullseye	P73-383
C1	As above, except with yellow inner lens	P73-384
C2	Same as Ref. C, except with red inner lens	P73-385
C3	Same as Ref. C, except with lunar white inner lens.	P73-386
D	LENS UNIT COMPLETE, for 3 pin rebased lamp, for curved track, with 5-1/2" dia. green inner lens and 8-3/8" dia., clear, outer lens with 40 degree deflecting bullseye and 20 degree deflecting roundel to right.	P73-387
D1	As above, except with 20 degree, deflecting roundel to left.	P73-390
D2	LENS UNIT COMPLETE, for 3 pin rebased lamp, for curved track, with 5-1/2" dia., yellow inner lens and 8-3/8" dia., clear, outer lens with 40 degree deflecting bullseye and 20 degree deflecting roundel to right.	P73-388
D3	Same as Ref. D2, except with 20 degree deflecting roundel to left . .	P73-391

Type G Signal – Lens Units

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
D4	LENS UNIT COMPLETE, for 3 pin rebased lamp, for curved track, with 5-1/2" dia., red inner lens and 8-3/8" dia., clear, outer lens with 40 degree deflecting bullseye and 20 degree deflecting roundel to right	P73-389
D5	Same as Ref. D4, except with 20 degree deflecting roundel to left	P73-392
D6	LENS UNIT COMPLETE, for 3 pin rebased lamp, for curved track, with 5-1/2" dia., green inner lens and 8-3/8", clear, outer lens with 40 degree deflecting bullseye and 30 degree Spredlite roundel	P73-393
D7	Same as Ref. D6 except with yellow inner lens	P73-394
D8	Same as Ref. D6 except with red inner lens.	P73-395
1	CLIP, for inner lens	P73-177
2	SCREW, for clips	P73-132
2A	WASHER, lock, for above	P62-401
3	SHIM, for clips.	P73-343
4	SCREW, for mounting bracket Ref. 11 also for fastening rings together.	P73-180
4A	WASHER, lock, for above, used with mounting rings.	P85-801
5	VENTILATOR	P76-380
6	RING	P73-246
7	RING, bezel	P73-249
8	LENS, inner, 5-1/2" dia., green	P73-254
8A	As above, except yellow	P73-255
8B	Same as Ref. 8, except red	P73-256
8C	Same as Ref. 8, except lunar white	P73-746
9	INCANDESCENT LAMP, see Section 46, for ordering information	
10	RECEPTACLE COMPLETE, for bayonet base lamp, for references see page 32	P73-312
11	BRACKET, for mounting receptacle Ref. 10	P73-342
12	WASHER, for screw Ref. 4, when mounting bracket Ref. 11	P73-163
13	LENS, outer, 8-3/8" dia. clear, 4" focus, with 40 degree deflecting bullseye	P73-253
14	RING, adapter	P73-247
15	SCREW, for adapter and rings.	P73-124
15A	WASHER, lock, for above	P85-801
16	ROUNDEL, 8-3/8" dia., clear, 20 degrees deflecting	P76-111
16A	As above, except 30 degree Spredlite	P76-147
17	DISC, antiphan	A73-205

Type G Signal—Lens Units

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
18	BRACKET, for mounting receptacle Ref. 19	P73-401
19	RECEPTACLE COMPLETE, for two-pin rebased lamp	P73-402
19A	As above, except for three-pin rebased lamp	P73-926
20	WASHER, paper	P73-372
21	WASHER, metal	P73-368
22	SCREW, for mounting bracket Ref. 18	P73-378
22A	NUT, for above	P76-129
22B	WASHER, lock, for above	P62-401
23	REFLECTOR COMPLETE.	P73-409
24	SCREW, for mounting bracket Ref. 11	P73-427
	COMPOUND GASKET, 1/2 lb. for use in assembling outer lenses and roundels	P73-182

Memoranda

CATALOG SECTION P73
PARTS LIST
Types FA, MD, ME and MF
Color-Light Dwarf Signals

FOR ASSEMBLIES, SEE CATALOG SEC. 73

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Lens Units	40

GENERAL RAILWAY SIGNAL
A UNIT OF GENERAL SIGNAL
ROCHESTER NEW YORK 14602
PRINTED IN U.S.A.

Lens Units

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
22	STRAP, for holding Phankill unit in place	P73-304
23	BRACKET, for receptacle	P73-341
24	SCREW, for bracket	P50-253
24A	WASHER, lock, for above	P65-732
25	RING, bezel, for inner lens, for Type FA signal	P73-242
25A	As above except for Type MF signal	P73-248
25B	Same as Ref. 25 except for use when Phankill unit is employed, for Type FA signal	P73-245
25C	Same as Ref. 25B, except for Type MF signal	P73-250
26	CLIP, for lens	P73-176
27	SCREW, for clips	P65-200
27A	WASHER, lock, for above	P65-732
28	SCREW, for fastening rings to case	P73-257
28A	WASHER, lock, for above	P81-121
29	SCREW, for fastening rings to case when roundel is used	P73-258
29A	WASHER, lock, for above	P81-121
30	SCREW, for fastening rings to case when Phankill unit is used	P73-259
30A	WASHER, lock for above	P81-121

CATALOG SECTION P73
PARTS LIST
Types FA, MD, ME and MF
Color-Light Dwarf Signals

FOR ASSEMBLIES, SEE CATALOG SEC. 73

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GENERAL RAILWAY SIGNAL
A UNIT OF GENERAL SIGNAL
ROCHESTER NEW YORK 14602

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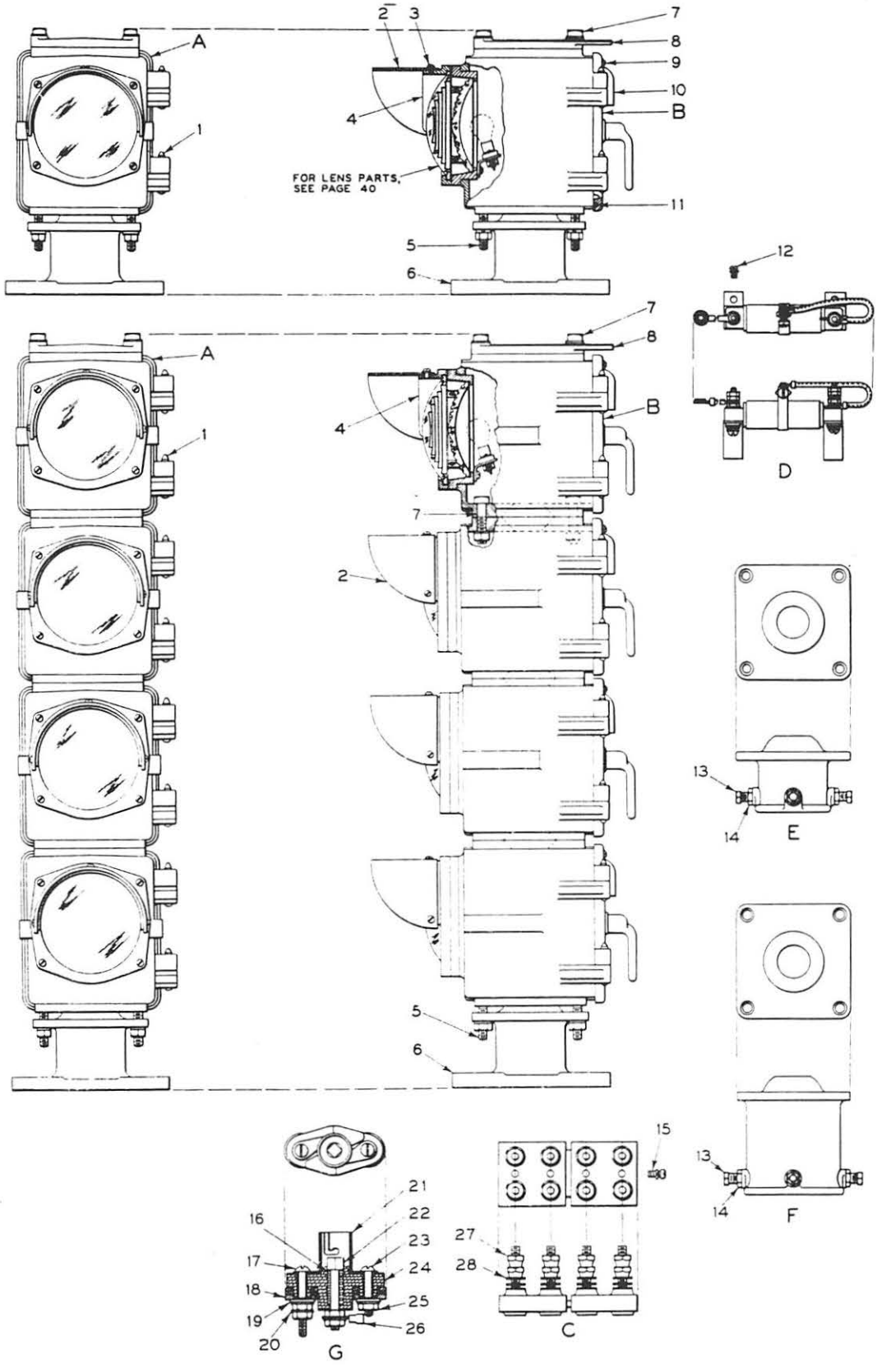


Type FA dwarf signal.

Type FA Dwarf Signal
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	CASE COMPLETE, with door, has holes for terminal block only. . .	P73-188
A1	As above, except drilled for terminal block and adjustable resistance unit	P73-190
A3	Same as Ref. A, except not drilled for terminal block, nor resistance unit	P73-187
B	DOOR COMPLETE, with handle, gasket and ventilator	P73-166
C	TERMINAL BLOCK COMPLETE, 3-way	P73-263
D	RESISTANCE UNIT COMPLETE, adjustable, 2 ohms, 1.75 amps. . .	P73-353
E	SOCKET COMPLETE, for mounting signal on 2-1/2" pipe	A73-590
F	SOCKET COMPLETE, for mounting signal on 3" pipe	A73-592
F1	As above, except for mounting signal on 4" pipe	A73-594
G	RECEPTACLE COMPLETE, for single contact, candelabra bayonet base lamp	P73-312
1	STUD, hinge pin, for door	P73-110
2	HOOD	P73-289
3	SCREW, for fastening hood to ring.	P73-142
3A	WASHER, lock, for above	P65-732
4	RING, for hood	P73-288
5	BOLT AND NUT, for fastening signal to base or socket	P73-123
5A	WASHER, lock, for above	P50-401
6	POST, only	P73-307
7	BOLT AND NUT, for cover plate, also for fastening units together .	P73-234
7A	WASHER, lead, for above	P50-738
7B	WASHER, lock, for above	P50-401
8	PLATE, cover	P73-211
9	SCREW, for fastening ventilator to door.	P50-249
10	VENTILATOR, for door	P50-205
10A	SCREEN, for ventilator	P50-207
10B	PLATE, for screen.	P50-206
11	GASKET, 2'-8" long, for door. Specify number feet	P85-457
12	SCREW, for mounting resistance unit	P85-233
12A	WASHER, lock, for above	P62-402
13	SCREW, set, for sockets	P73-279
14	NUT, for screw Ref. 13	P73-356
15	SCREW, for mounting terminal block	P62-214
15A	WASHER, lock, for above	P85-390
16	SPRING, for plunger	P76-240

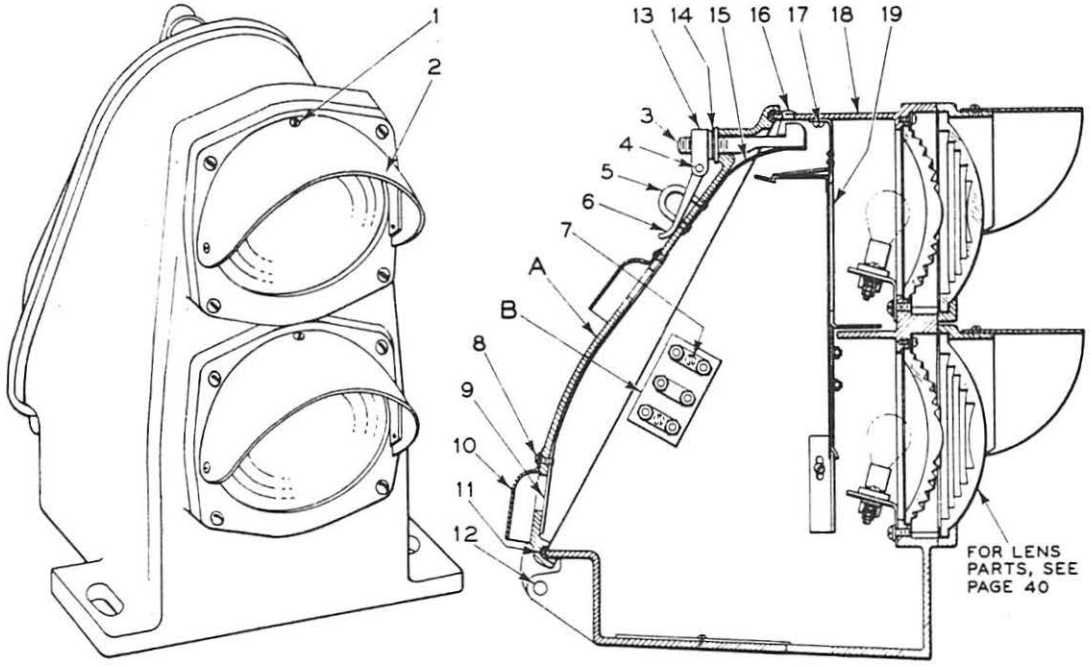
Type FA Dwarf Signal

Parts List

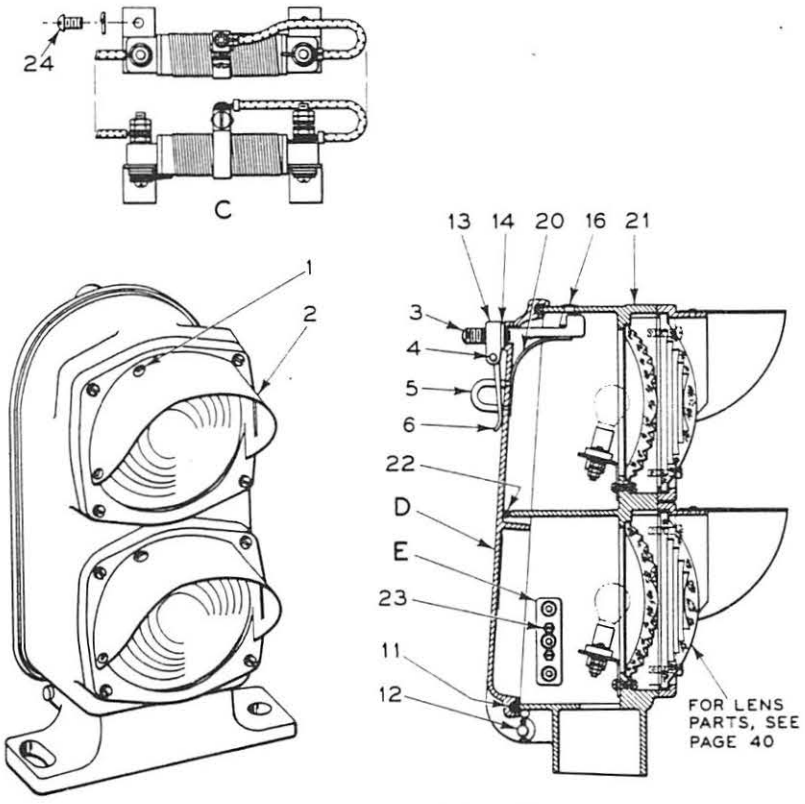
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
17	SCREW, for receptacle	P76-259
18	WASHER, six required	P76-235
19	WASHER, two required	P76-247
20	WASHER, lock, for nuts Ref. 25	P76-318
21	RECEPTACLE, only	P76-319
22	PLUNGER, for receptacle	P76-418
23	SCREW, for receptacle	P73-138
24	BLOCK, only	P76-410
25	NUT, for screws	P62-186
26	TERMINAL, AMP., for plunger	P73-355
27	NUT, for terminal posts	P76-131
28	WASHER, for terminal posts	P76-108

Memoranda



TYPE MD DWARF SIGNAL



TYPE ME DWARF SIGNAL

Types MD and ME dwarf signals.

Types MD and ME Dwarf Signals

Parts List

Order by catalog number and name shown in bold type

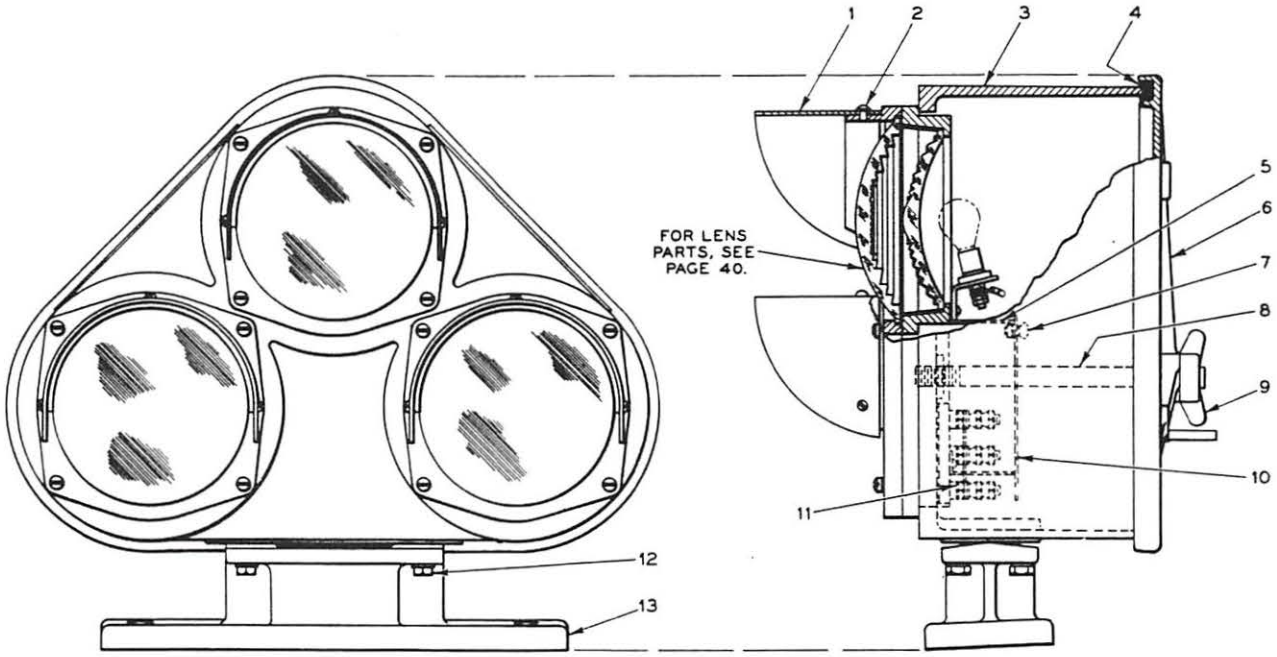
REF.	NAME	CATALOG NUMBER
A	DOOR COMPLETE, includes gasket, latch, hasp, staple and ventilator	P73-310
B	TERMINAL BLOCK COMPLETE	P73-265
C	RESISTANCE UNIT COMPLETE, 2.0 ohms, 1.75 amps.	P73-353
D	DOOR COMPLETE, includes hasp and gasket	P73-165
E	TERMINAL BLOCK COMPLETE	P85-548
1	SCREW, for fastening hood to lens ring	P73-142
1A	WASHER, lock, for above.	P65-732
2	HOOD, 4" long	P73-289
3	LOCK LATCH, for door.	P73-316
4	PIN, for hasp	P73-149
5	STAPLE, for hasp	P85-312
6	HASP, for door	P73-154
7	SCREW, for mounting terminal block.	P62-214
7A	WASHER, lock for above	P65-168
8	SCREW, for ventilator	P50-249
9	PLATE, for ventilator	P50-206
9A	SCREEN, for ventilator	P50-207
10	VENTILATOR, only	P50-205
11	GASKET. Specify number feet	P81-215
12	PIN, hinge for door	P76-102
13	NUT, for lock latch	P73-155
14	WASHER, steel	P50-737
14A	WASHER, lead	P73-179
15	SPRING, for Ref. A.	P73-315
16	STUD, for lock latch	P73-109
17	SCREW, for fastening shield to case	P73-141
17A	WASHER, lock, for above	P65-168
18	CASE, only, drilled for terminal block	P73-313
18A	As above, except drilled for Phankill unit	P73-314
19	SHIELD COMPLETE	P73-306
20	SPRING, for door Ref. D	P76-416
21	CASE, only, drilled for terminal block	P73-204
21A	As above, except drilled for Phankill unit	P73-205
22	BUSHING, wire guide	P73-148
22A	SCREW, for above	P73-139

Types MD and ME Dwarf Signals

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
22B	WASHER, lock, for above	P73-275
23	SCREW, for mounting terminal block	P73-157
24	SCREW, for mounting resistance unit	P85-233
24A	WASHER, lock, for above	P62-402

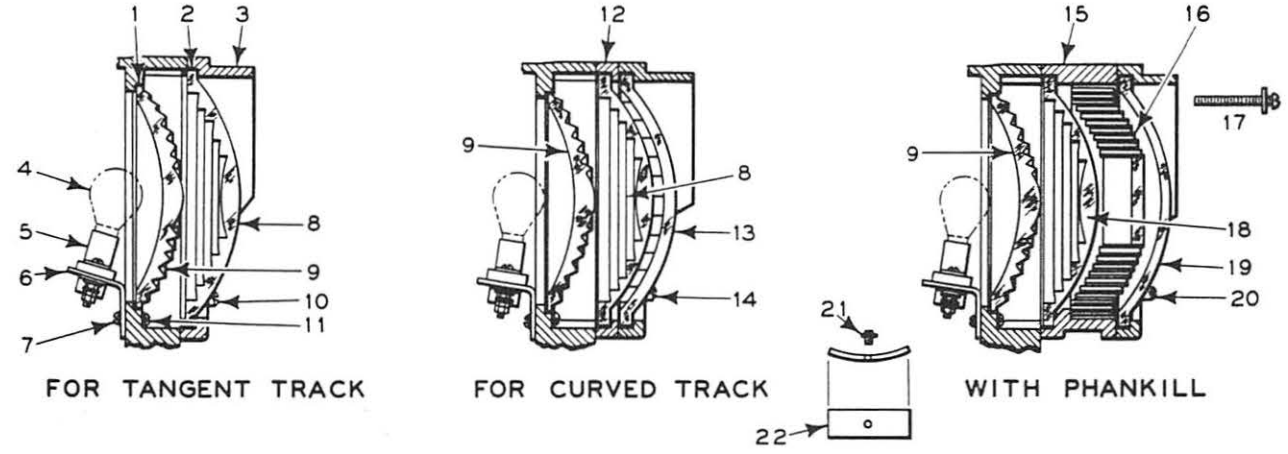


Type MF Dwarf Signal

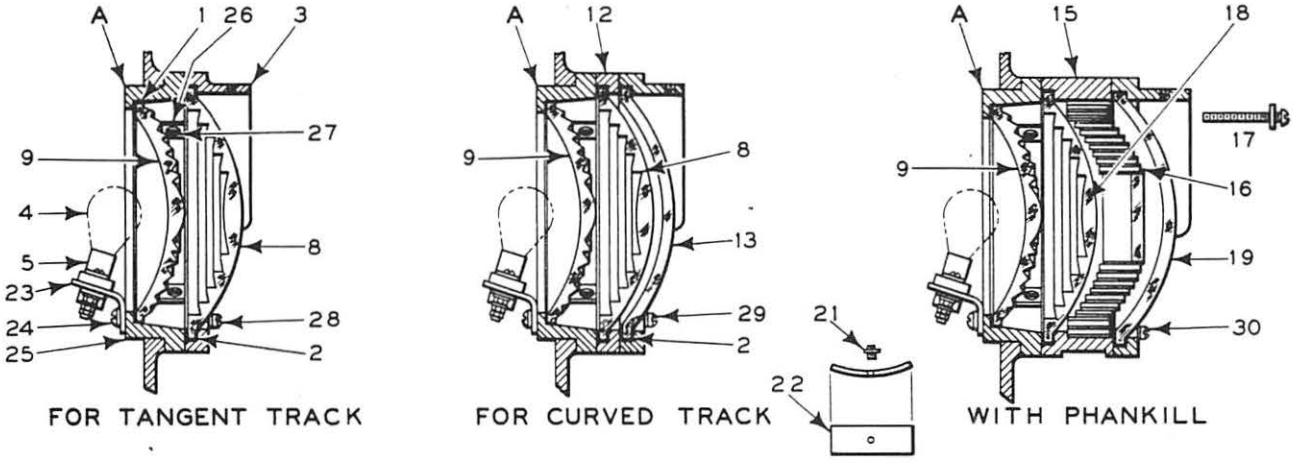
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	HOOD, 4" long	P73-289
2	SCREW, for fastening hood to lens ring	P73-142
2A	WASHER, lock, for above.	P65-732
3	CASE, only	P73-206
4	GASKET, 4' - 4 3/4" long. Specify number feet	P76-336
5	SHIELD	P73-301
6	DOOR, only	P73-207
7	SCREW, thumb, for cover	P73-144
8	STUD, for door	P73-117
9	NUT, wing, for door	P73-156
10	COVER	P73-305
11	TERMINAL BLOCK COMPLETE, 3-way.	P73-263
12	SCREW, for base	P85-440
12A	WASHER, lock, for above.	P81-190
13	BASE, only	P73-181



FOR TYPES MD AND ME DWARF SIGNALS



FOR TYPES FA AND MF DWARF SIGNALS

Lens Units

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	LENS UNIT COMPLETE, inner, includes bezel ring, green lens, gasket and clips, for Types FA and MF signals.	P73-215
A1	As above, except with yellow lens, for Types FA and MF signals	P73-216
A2	Same as Ref. A, except with red lens, for Types FA and MF signals	P73-217
A3	LENS UNIT COMPLETE, inner, includes bezel ring, green lens, gasket and clips for use with Phankill unit, for Types FA and MF signals .	P73-218
A4	Same as Ref. A3, except with yellow lens, for Types FA and MF signals .	P73-219
A5	Same as Ref. A3, except with red lens for Types FA and MF signals. . . .	P73-220

Lens Units

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	GASKET, for inner lens	P73-161
2	GASKET, for outer lens	P73-159
3	RING, hood	P73-288
4	INCANDESCENT LAMP, see Section 46, for ordering information	
5	RECEPTACLE COMPLETE, for references see page 32	
6	BRACKET, for receptacle	P73-340
7	SCREW, for bracket	P73-180
7A	WASHER, lock, for above	P73-308
8	LENS, outer, 6-3/8" dia., clear, with 40 degree deflecting bullseye.	P73-320
8A	As above, except with gasket	P73-345
9	LENS, inner, 5-1/2" dia., red	P73-256
9A	As above, except yellow.	P73-255
9B	Same as Ref. 9, except green.	P73-254
10	SCREW, for fastening hood ring to case	P85-120
10A	WASHER, lock, for above	P81-121
11	SCREW, for fastening inner lens to case	P85-234
11A	WASHER, for above	P73-128
11B	WASHER, lock, for above	P62-334
12	RING, adapter for outer roundel	P73-243
13	ROUNDEL, outer, 6-3/8" dia., clear, 20 degree deflecting	P73-152
13A	As above, except with gasket	P73-346
13B	ROUNDEL, outer, 6-3/8" dia., clear, 25 degree spredlite	P73-153
13C	As above, except with gasket	P73-348
14	SCREW, for fastening ring and hood ring to case	P73-232
14A	WASHER, lock, for above.	P81-121
15	RING, for Phankill unit	P73-244
16	PHANKILL UNIT, with 25 degree close-up prism	P73-354
17	SCREW, for locking Phankill unit to case	P73-143
17A	WASHER, lock, for above	P85-390
18	LENS, outer, 6-3/8" dia., clear, for use with Phankill unit	P73-319
18A	As above, except with gasket	P73-344
19	ROUNDEL, outer, 6-3/8" dia., clear, for use with Phankill unit.	P73-151
19A	As above, except with gasket	P73-347
20	SCREW, for fastening Phankill ring and hood ring to case.	P73-277
20A	WASHER, lock, for above	P81-121
21	SCREW, set, for strap	P73-140
21A	NUT, for above	P76-129

Lens Units

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
22	STRAP, for holding Phankill unit in place	P73-304
23	BRACKET, for receptacle	P73-341
24	SCREW, for bracket	P50-253
24A	WASHER, lock, for above	P65-732
25	RING, bezel, for inner lens, for Type FA signal	P73-242
25A	As above except for Type MF signal	P73-248
25B	Same as Ref. 25 except for use when Phankill unit is employed, for Type FA signal	P73-245
25C	Same as Ref. 25B, except for Type MF signal	P73-250
26	CLIP, for lens	P73-176
27	SCREW, for clips	P65-200
27A	WASHER, lock, for above	P65-732
28	SCREW, for fastening rings to case	P73-257
28A	WASHER, lock, for above	P81-121
29	SCREW, for fastening rings to case when roundel is used	P73-258
29A	WASHER, lock, for above	P81-121
30	SCREW, for fastening rings to case when Phankill unit is used	P73-259
30A	WASHER, lock for above	P81-121

CATALOG SECTION P73
PARTS LIST
Color-Light Dwarf Signals
Type P

FOR ASSEMBLIES, SEE CATALOG SEC. 73

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ROCHESTER NEW YORK 14602
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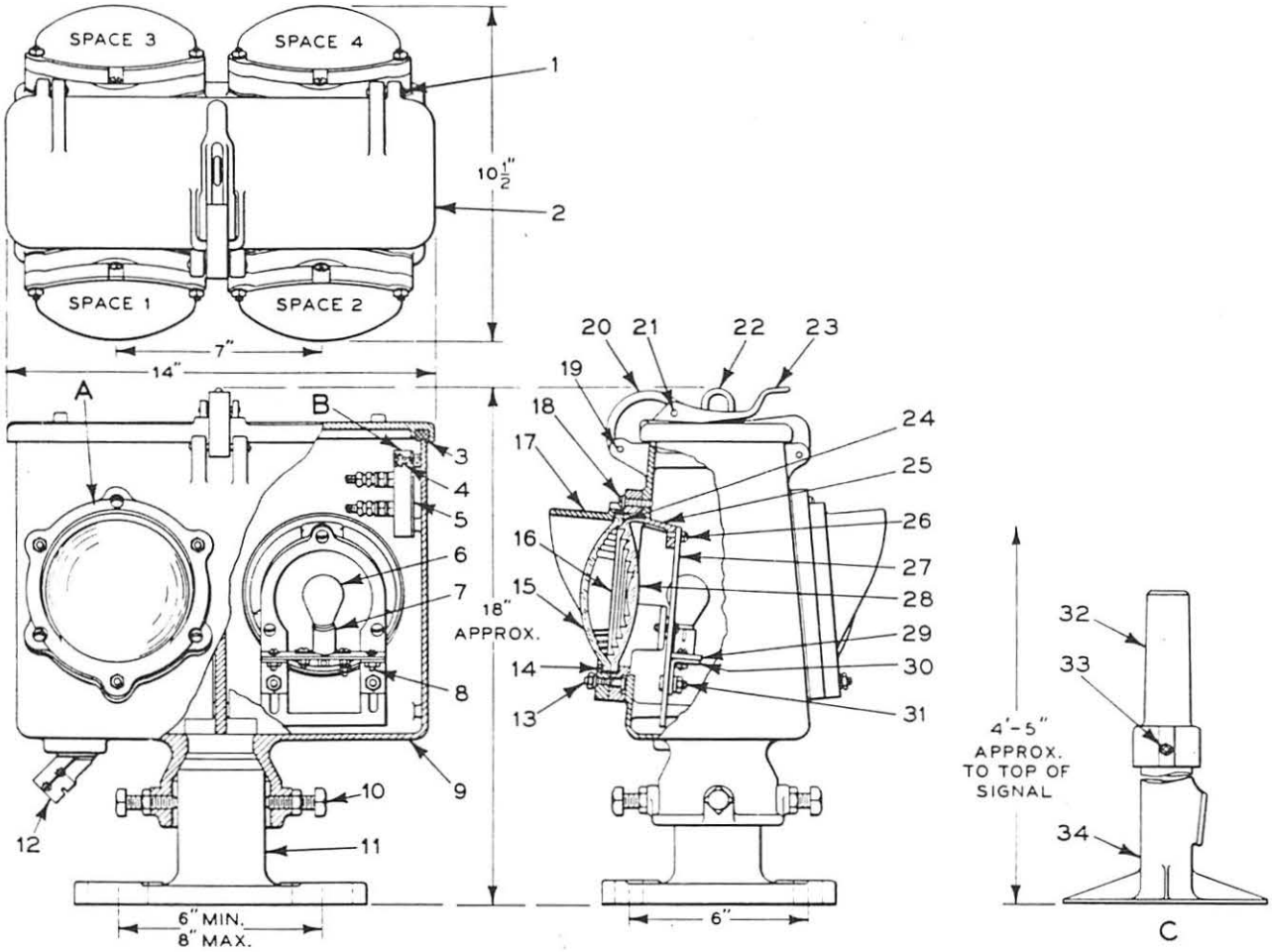

Type P signal.

Type P Signal

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	LENS UNIT COMPLETE, has 5-3/8" dia. red roundel with 20 degree deflection and 18 degree horizontal spread, also has 5-3/8" diameter clear, inverted lens. Lamp bulb is not included, see Section 46 and order separately.	P73-910
A1	As above, except has green roundel	P73-911
A2	Same as Ref. B except has yellow roundel	P73-912
A3	Same as Ref. B except has lunar white roundel	P73-913
B	TERMINAL BLOCK COMPLETE	P73-923
C	PEDESTAL COMPLETE, for mounting signal above ground level	P73-905
1	PIN, hinge for door	P50-434
2	DOOR, only	P73-909
3	GASKET, 3 ft. long, for door. Specify number feet required	P85-457
4	SCREW, for mounting terminal block	P73-900
4A	WASHER, lock, for above	P81-121
5	WASHER, insulating for terminal block	P73-922
6	LAMP, incandescent, see Section 46, for ordering information.	
7	RECEPACLE COMPLETE, for single contact, candelabra bayonet base lamp	P73-312
8	SCREW, for fastening plate Ref. 29 to bracket	P50-253
8A	WASHER, for above	P76-247
8B	WASHER, lock for above	P85-390
8C	NUT, for above	P76-129
9	CASE COMPLETE, includes screws for fastening to base	P73-907
10	SCREW, for base	P73-279
10A	NUT, for above	P73-356
11	BASE, only	P73-906
12	CONNECTOR, 45 degrees, for 3/4" flexible conduit	P73-918
13	SCREW, for fastening ring to outer bezel ring	P73-904
13A	NUT, for above	P62-333
14	GASKET, for roundel	P73-161
15	ROUNDEL, 5-3/8" diameter, red, 20 degree deflecting, has 18 degree horizontal spread	P73-707
15A	As above, except with gasket	P73-836
15B	Same as Ref. 15 except green	P73-709
15C	Same as Ref. 15B, except with gasket	P73-838
15D	Same as Ref. 15 except yellow	P73-708

Type P Signal

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
15E	Same as Ref. 15D except with gasket	P73-837
15F	Same as Ref. 15, except lunar white	P73-710
15G	Same as Ref. 15, except with gasket	P73-839
16	DISC, antiphan	P73-920
17	RING, outer bezel	P73-916
18	SCREW, for mounting lens unit	P73-901
18A	WASHER, lock, for above	P81-121
19	PIN, for strap	P73-113
20	STRAP, for hasp	P73-197
21	PIN, for hasp	P73-129
22	STAPLE, for hasp	P81-141
23	HASP, for door	P73-908
24	GASKET, 15 3/4" long. Specify number feet required	P30-215
25	RING, as shown	P73-917
26	SCREW, for fastening inner ring to bezel ring	P73-902
26A	WASHER, lock, for above	P81-121
27	RING, inner bezel	P73-915
28	LENS, clear, 5-3/8" dia., inverted, 2-1/4" focus	P73-775
28A	As above, except with gasket	P73-925
29	PLATE, for supporting lamp receptacle	P73-919
30	BRACKET, for plate Ref. 29	P73-921
31	SCREW, for fastening bracket to inner bezel ring	P73-903
31A	WASHER, lock, for above	P81-121
32	ADAPTER, for signal	P73-924
33	SCREW, set, for adapter	P73-914
33A	NUT, for above	P81-147
34	PEDESTAL, only	A91-233
	COMPOUND GASKET, 1/2 lb. for use in assembling lenses and roundels	P73-182

CATALOG SECTION P73
PARTS LIST
Type W Marker Lights
Color-Light Signals

FOR ASSEMBLIES, SEE CATALOG SEC. 73

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ROCHESTER NEW YORK 14602

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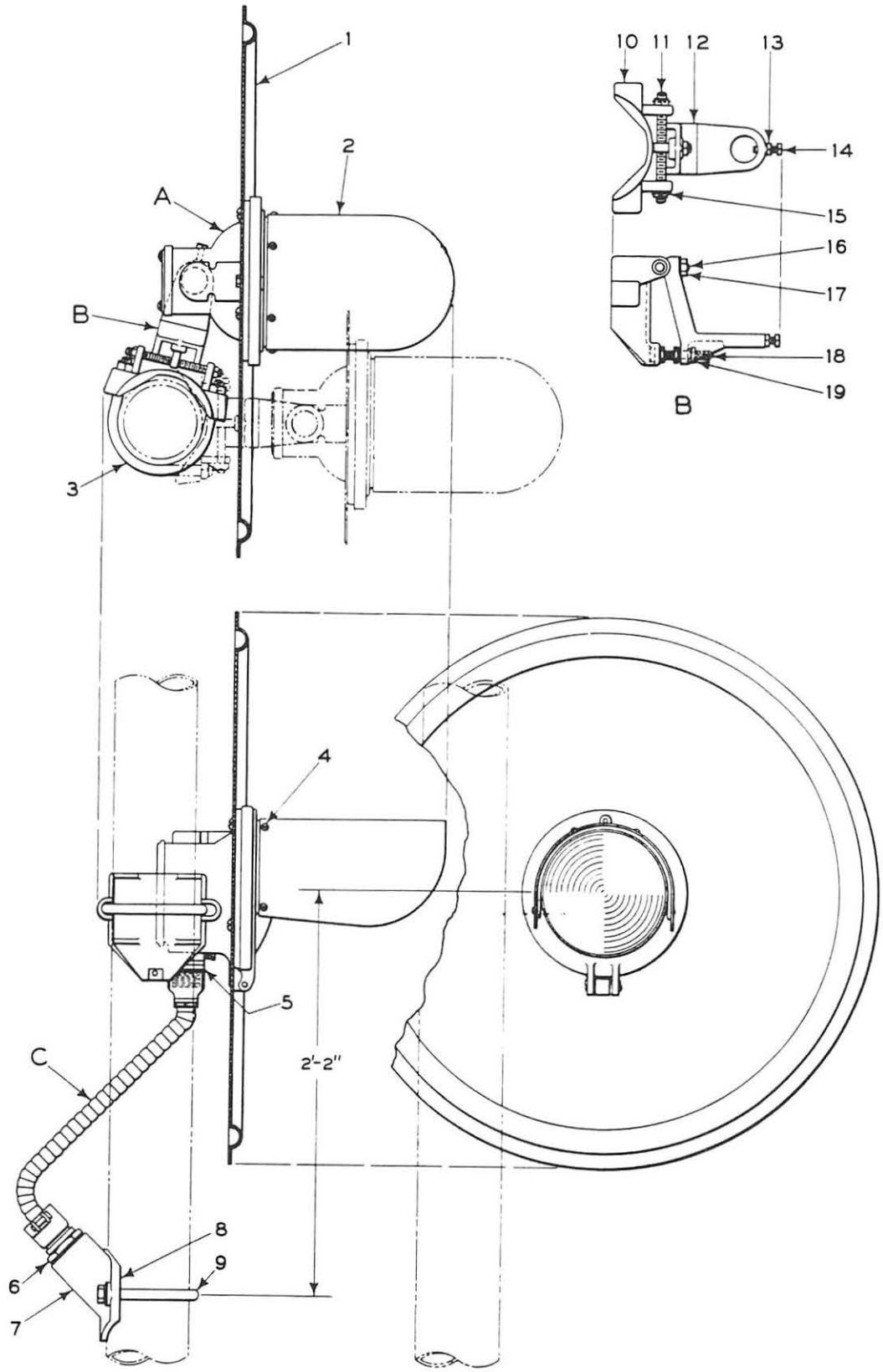
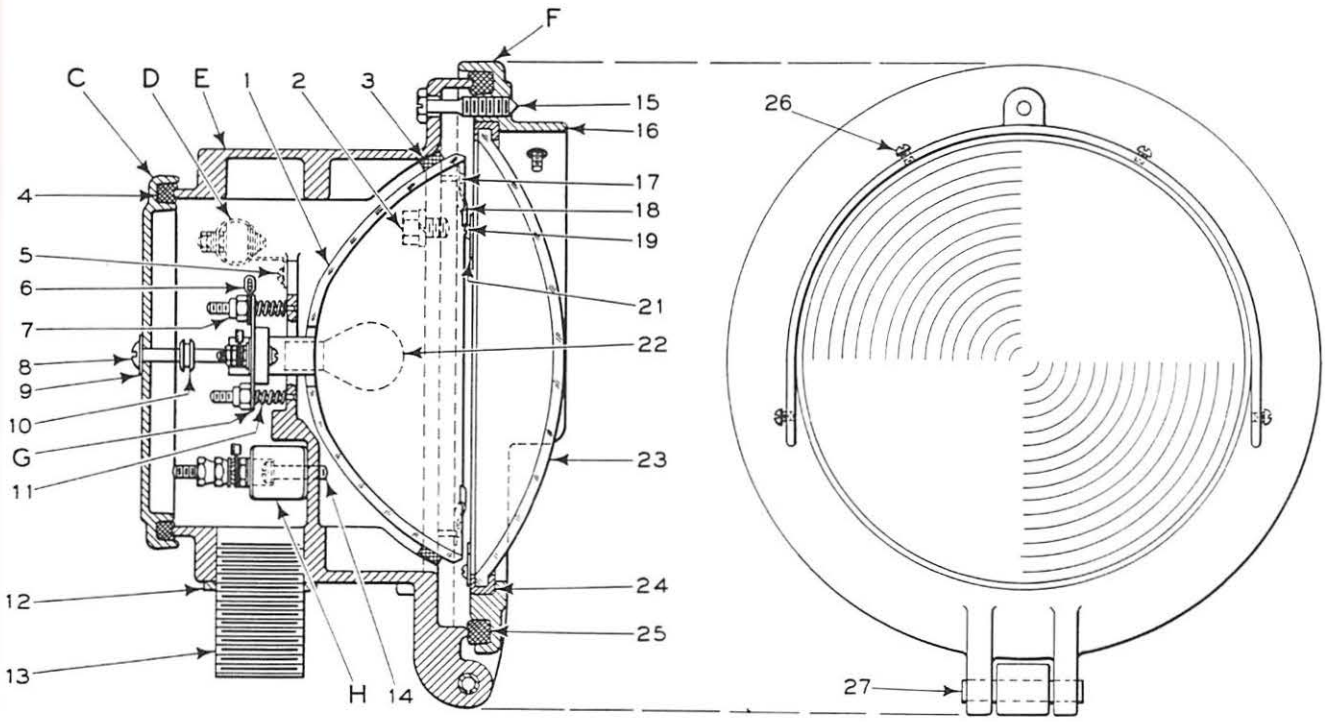


Type W marker light.

Type W Marker Light
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	LIGHT UNIT COMPLETE, for references see page 54	
B	CLAMP COMPLETE, for mounting to 5" diameter mast	P73-330
C	CONDUIT COMPLETE, 3/4" flexible	P73-233
1	BACKGROUND, 2'-11" diameter	P73-293
1A	As above, except 2'-0" diameter	P73-294
2	HOOD	P73-287
3	U BOLT, for 5" diameter mast	P76-289
3A	WASHER, for above	P85-109
3B	NUT, for above	P85-186
4	SCREW, for fastening hood to case	P76-109
5	NUT, lock	P73-273
6	REDUCER, 2" to 3/4"	P76-332
7	COUPLING, for mast	P76-365
8	GASKET, for coupling	P76-277
9	U BOLT, for fastening coupling to 5" diameter mast	P76-294
9A	WASHER, for above	P76-201
9B	WASHER, lock, for above	P81-104
9C	NUT, for above	P85-204
10	CLAMP, only, for clamp Ref. B	P73-335
11	STUD, for eyebolt Ref. 16	P73-116
12	ARM, only, for clamp	P73-336
13	NUT, for screw Ref. 14	P85-413
14	SCREW, set, for locking signal unit to clamp	P73-125
15	PIN, [illegible], for locking nut to stud	P73-173
16	EYEBOLT, for stud	P73-231
17	NUT, for eyebolt and stud Ref. 11	P81-147
18	BOLT, for adjusting light unit	P73-337
19	NUT, for bolt Ref. 18	P76-275



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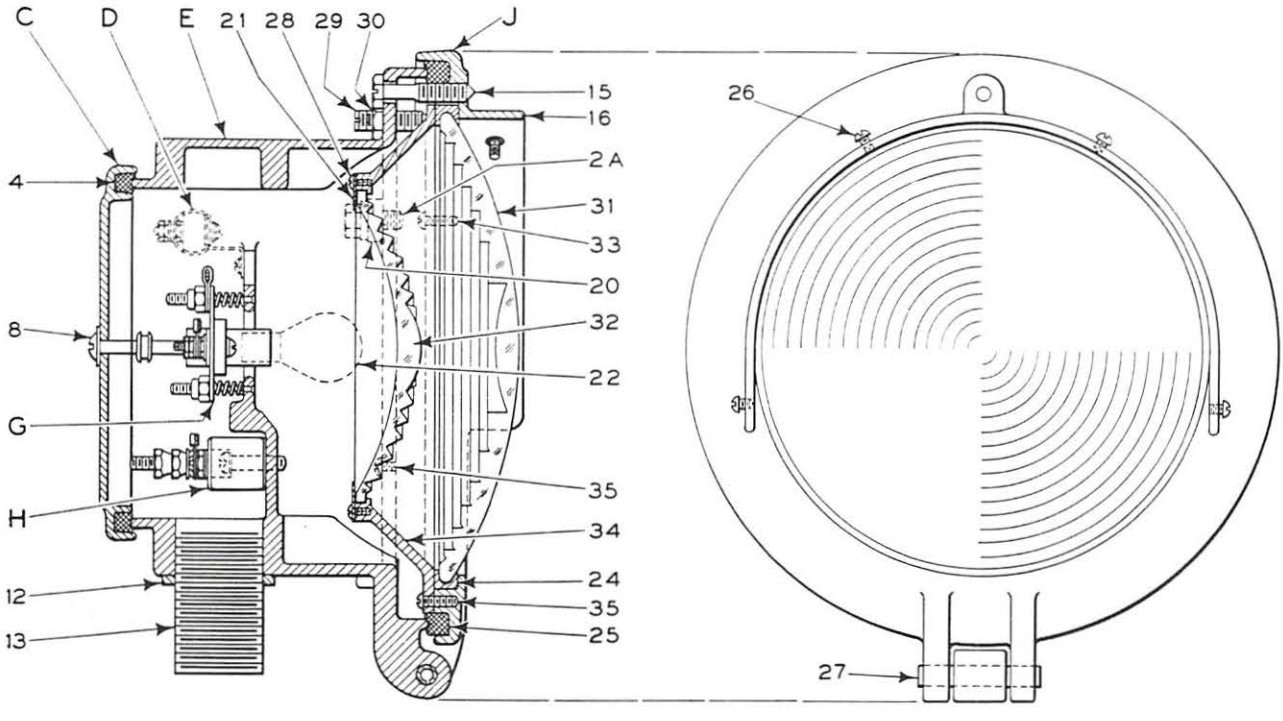

B

Type W light unit.

Type W Light Unit

Parts List

To order, specify "Type W Light Unit" and give catalog number

REF.	ASPECT	CATALOG NUMBER	
		WITH 2-OHM, 1.75 AMP. RESISTOR	WITH 5-OHM, 1.0 AMP. RESISTOR
		WITH REFLECTOR AND ROUNDEL	
A	Red	P73-323	P73-322
A1	*Frosted	P73-325	P73-326
		WITH DOUBLET LENS	
B	Red	P73-328	P73-329

*For use with stencil "T" or "S"

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
C	COVER COMPLETE, with gasket	P73-333
D	RESISTANCE UNIT, 2 ohms, 1.75 amps	P73-353
D1	As above, except, 5 ohms, 1.0 amp	P73-352
E	CASE COMPLETE, includes studs for lamp receptacle, lock nut Ref. 12 and nipple Ref. 13	P73-334
F	RING COMPLETE, with 8-3/8" dia., red roundel	P73-331
F1	As above, except with frosted roundel, for use with stencils.	P73-332
G	RECEPTACLE COMPLETE	P73-311
H	TERMINAL BLOCK COMPLETE.	P73-261
J	LENS UNIT COMPLETE, with 5-1/2" dia., inner red lens and 8-3/8" dia., outer lens with 40 degree deflecting bullseye	P73-212
1	REFLECTOR, only.	P76-146
2	SCREW, for fastening background to unit Ref. A	P73-119
2A	As above, except for unit Ref. B	P76-204
2B	WASHER, lock, for above	P85-122
3	GASKET, for reflector	P73-162
4	GASKET, 19-3/8" long, for cover. Specify number of feet.	P76-133
5	SCREW, for mounting resistance unit.	P85-234
5A	WASHER, lock, for above	P62-402
6	CLIP, for receptacle.	P73-318
7	NUT, elastic stop, for receptacle	P76-333

Type W Light Unit
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
8	SCREW, for cover	P73-170
9	WASHER, for screw Ref. 8	P85-50
10	GROMMET, for screw Ref. 8	P73-349
11	SPRING, for receptacle	P73-114
12	NUT, lock, for nipple	P73-183
13	NIPPLE, for mounting marker light	P73-274
14	SCREW, for mounting terminal block	P62-220
14A	WASHER, lock, for above	P62-401
15	SCREW, for fastening door to case	P73-339
16	RING, door	P73-338
17	SCREW, for clip Ref. 18	P85-234
17A	WASHER, lock, for above	P62-334
18	CLIP, for reflector	P73-175
19	SCREW, for clip Ref. 21	P73-135
20	SPACER, for screws Ref. 2A	P73-201
21	CLIP, for fastening inner lens in place	P73-174
22	LAMP, incandescent, see Section 46, for ordering information	
23	ROUNDEL, red, 8-3/8" dia	P73-271
23A	As above, except frosted	P73-272
24	GASKET, for outer lens and roundel	P73-160
25	GASKET, 2'-7" long, for door. Specify number feet.	P76-132
26	SCREW, for fastening hood to door ring	P85-238
27	PIN, roll, hinge for door	P50-159
28	SCREW, for clip	P65-198
29	SCREW, stop, for lens unit	P73-237
30	NUT, for stop screw	P85-413
31	LENS, outer, 8-3/8" dia., clear, 4" focus, with 40 degree deflecting bullseye	P73-253
32	LENS, inner, 5-1/2" dia., red, 1/2" focus	P73-256
33	SCREW, for outer ring	P73-137
34	RING, inner bezel	P73-241
35	SCREW, for inner ring	P73-135

CATALOG SECTION P73

PARTS LIST

Lenses, and Roundels

for

GRS Signals

GENERAL RAILWAY SIGNAL
A UNIT OF GENERAL SIGNAL
ROCHESTER NEW YORK 14692

PRINTED IN U.S.A.

Lenses for GRS Signals

To order, specify "Lens" and give catalog number.
See page 96 for gaskets.*

Dia. In.	Focus In.	Description	Color	For GRS Signal, Type:	CATALOG NUMBER Glass	Acrylic	Polycarbonate
8 3/8	5	Opt. 40° Deflecting BE.	Clear	Searchlight	P76-324		
8 3/8	5	Optical	Clear	Searchlight	P76-323		
8 3/8	5	O.D. 30° Spred.	Clear	Searchlight	P73-1010		
8 3/8	4	Outer Doublet	Clear	D-D1-E-G-G1-L-MA-U-W		P73-939	P73-940
8 3/8	4	O.D. 8° Spred.	Clear	D-D1-E-G-G1-L-MA-U-W	P73-736		
8 3/8	4	O.D. 40° Defl. Bullseye	Clear	D-D1-E-G-G1-L-MA-U-W	P73-253	P73-932	P73-941
8 3/8	4	O.D. 8° Defl. 20 Toric	Clear	D-D1-E-G-G1-L-MA-U-W	P73-737		
8 3/8	4	O.D. 30° Spred.	Clear	D-D1-E-G-G1-L-MA-U-W			P73-942
8 3/8	4	O.D. 30° Spred. 20° Toric	Clear	D-D1-E-G-G1-L-MA-U-W	P73-739		
8 3/8	11 1/2	Optical	Clear	Searchlight			P73-1011
8	13	Plano Convex	Clear	Searchlight	P76-148		
6 3/8	3 3/4	O.D. 30° Spred.	Clear	AW-FA-MD-ME-MF with Phankill	P73-1012		
6 3/8	3 3/4	Optical	Clear	AW-FA-MD-ME-MF with Phankill	P73-319	P73-945	P73-944
6 3/8	3 3/4	Opt. 40° Deflect. BE.	Clear	AW-FA-MD-ME-MF Searchlight		P73-946	P73-947
5 1/2	1/2	Inner Doublet	Green	AW-D-D1-E-FA-G-G1-L-MA-MD-ME-MF U-W	P73-254	P73-948	
5 1/2	1/2	Inner Doublet	Yellow	AW-D-D1-E-FA-G-G1-L-MA-MD-ME-MF U-W	P73-255	P73-949	
5 1/2	1/2	Inner Doublet	Red	AW-D-D1-E-FA-G-G1-L-MA-MD-ME-MF U-W	P73-256	P73-950	
5 1/2	1/2	Inner Doublet	Clear	AW-D-D1-E-FA-G-G1-L-MA-MD-ME-MF U-W	P73-745	P73-951	
5 1/2	1/2	Inner Doublet	Lun. Wh.	AW-D-D1-E-FA-G-G1-L-MA-MD-ME-MF U-W	P73-746	P73-952	

*None of the lenses shown on this page requires a rubber gasket.

Lenses for GRS Signals

To order, specify "Lens" and give catalog number.
See page 96 for gaskets.

Dia. In.	Focus In.	Description	Color	For GRS Signal, Type:	CATALOG NUMBER Glass	Acrylic	Polycarbonate
5 3/8	3 1/2	30° Spredlite	Highway Xing Red	XB-XD Crossing		P73-953	
5 3/8	3 1/2	Optical	Clear	Semaphore	P73-1013		
5 3/8	2 1/4	Inverted	Clear	P-Switch		P73-975*	
5	2 3/4	Outer Doublet	Clear	F-Semaphore-Markers	P73-763		
5	2 3/4	O.D. Toric	Clear	F-Semaphore-Markers	P73-764		
5	3 1/2	Optical	Clear	A-AT-Semaphore	P73-725	P73-1014	
5	3 1/2	Optical	Red	A-AT-Semaphore	P73-726		
5	3 1/2	Optical	Yellow	A-AT-Semaphore	P73-727		
5	3 1/2	Optical	Green	A-AT-Semaphore	P73-728		
5	3 1/2	Optical	Lun. Wh.	A-AT-Semaphore	P73-729		
4 15/32	6 1/2	Plano-Convex	Clear	Searchlight	P76-150		
4 15/32	5 1/2	Plano-Convex	Clear	SC-SA-SA-1 & Marker	P76-447		
4	2 1/4	Optical	Clear	VA-(Color Pos. Light -Dwarf)			P73-954
3 5/8	5/8	Inner Doublet	Green	AN-F-Semaphore-Marker	P73-755	P73-1003	
3 5/8	5/8	Inner Doublet	Yellow	AN-F-Semaphore-Marker		P73-1000	
3 5/8	5/8	Inner Doublet	Red	AN-F-Semaphore-Marker	P73-757	P73-1002	
3 5/8	5/8	Inner Doublet	Lun. Wh.	AN-F-Semaphore-Marker		P73-1001	
3	3	Optical	Red	AW		P73-1015	
3	3	Optical	Lun. Wh.	AW		P73-1016	
2 3/4	3/8	Inner Doublet	Green	VA-(Color-Position Light)	P73-865		
2 3/4	3/8	Inner Doublet	Yellow	VA-(Color-Position Light)	P73-866		
2 3/4	3/8	Inner Doublet	Red	VA-(Color-Position Light)	P73-867		
2 3/4	3/8	Inner Doublet	Lun. Wh.	VA-(Color-Position Light)	P73-868		
2 3/4	3/8	Inner Doublet	Clear	VA-(Color-Position Light with anti-phan disc)	P73-869		

*Does not require a rubber gasket.

Roundels for GRS Signals

To order, specify "Roundel" and give catalog number.
See page 96 for gaskets.

Dia. In.	Description	Color	For GRS Signal, Type:	CATALOG NUMBER		
				Glass	Acrylic	Polycarbonate
10	Cover	Clear	D-G			P73-107
8 3/8	Flat Roundel	Clear	Semaphore - Searchlight with Phankill	P76-264		
8 3/8	Cvx. Cover 20° Deflecting	Clear	D-D1-E-G-G1-L-MA-Searchlight		P73-958	
8 3/8	Cvx. Cover 20° Deflecting Plain Center	Clear	D-D1-E-G-G1-L-MA-Searchlight	P73-701		
8 3/8	Cvx. 15° Spred. Hot Spot Off Center	Clear	Searchlight (With Compound Lens)	P76-113		
8 3/8	"V" shaped	Clear	Searchlight (Dwarf)			P76-284
8 3/8	Convex	Red	Semaphore - W (With Reflector		P73-960	
8 3/8	Convex	Green	Semaphore - W (With Reflector		P73-962	
8 3/8	Convex	Yellow	Semaphore - W (With Reflector		P73-961	
8 3/8	Convex	Clear	Semaphore - W (With Reflector	P73-772		
8 3/8	Convex	Clear Frosted	Semaphore - W (With Reflector	P73-272		
8 3/8	Convex	Lun. Wh.	Semaphore - W (With Reflector	P73-773	P73-963	
8 3/8	Cvx. 30° Spred.	Clear	D-D1-E-G-G1-L-MA-Searchlight	P76-147		
8 3/8	Cvx. 30° Spred.	Yellow	D-D1-E-G-G1-L-MA-Searchlight	P73-1018		
8 3/8	Cvx. 30° Spred.	Highway Xing Red	XA-XB-XC-XD		P73-934	
8 3/8	Cvx. 70° Spred.	Highway Xing Red	XA-XB-XC-XD	P30-269		
8 3/8	Cvx. 70° Spred. w/Hot Spot Bullseye	Highway Xing Red	XA-XB-XC-XD			P73-1019
8 3/8	Cvx. 70° Spred.	Clear	D-D1-E-G-G1-L-MA-Searchlight	P73-1020		
8 3/8	Cvx. 30° Spred. 15° Deflecting w/Hot Spot Bullseye	Highway Xing Red	XA-XB-XC-XD			P73-957
8 3/8	Cvx. 20° Spred. 32° Deflecting	Highway Xing Red	XA-XB-XC-XD		P73-967	
8 3/8	Cvx. 20° Horiz. Def. 10° Vert. Spred. w/Hot Spot Bullseye	Highway Xing Red	XA-XB-XC-XD			P73-956

*None of the roundels on this page requires a rubber gasket.

Roundels for GRS Signals

To order, specify "Roundel" and give catalog number. See below for gaskets.*

Dia. In.	Description	Color	For GRS Signal, Type:	CATALOG NUMBER		
				Glass	Acrylic	Polycarbonate
8 3/8	Flat 20° Defl. with plain center	Clear	Searchlight	P76-448		
8 3/8	Flat 10° Defl. with plain center	Clear	Searchlight		P73-936	P73-959
8 3/8	Flat 30° Spred. 2 3/4 Dia. plain center	Clear	Searchlight	P76-449		
6 3/8	Cvx. Cover Plain	Clear	DM-(MD-ME with Phankill)	P73-151		
6 3/8	Cvx. Cover 20° Deflecting	Clear	DM-MD-ME-FA Searchlight	P73-152		
6 3/8	Cvx. Cover Plain	Yellow	DM-(MD-ME with Phankill)	P73-1021		
6 3/8	Cvx. Cover 25° Spred. Defl.	Clear	DM-MD-ME-FA Searchlight	P73-153		
6 3/8	Cvx. Cover 25° Spred. Defl.	Red	FA (With Reflector)	P73-703		
6 3/8	Cvx. Cover plain	Frosted	AW-FA (Yard Indicator)	P73-705		
5 3/8	Cvx. 20° Defl. 18° Spredlite	Red	P Switch		P73-969	
5 3/8	Cvx. 20° Defl. 18° Spredlite	Yellow	P Switch		P73-970	
5 3/8	Cvx. 20° Defl. 18° Spredlite	Green	P Switch		P73-971	
5 3/8	Cvx. 20° Defl. 18° Spredlite	Lun. Wh.	P Switch		P73-968	
5 3/8	Convex Roundel	Clear	Semaphore		P73-1022*	
5 3/8	Convex Roundel	Red	Semaphore		P73-972*	
5 3/8	Convex Roundel	Yellow	Semaphore		P73-973*	
5 3/8	Convex Roundel	Green	Semaphore		P73-974*	
5 3/8	Convex Roundel	Lun. Wh.	Semaphore		P73-1023*	

*Does not require a rubber gasket.

Roundels for GRS Signals

To order, specify "Roundel" and give catalog number. See below for gaskets.*

Dia. In.	Description	Color	For GRS Signal, Type:	CATALOG NUMBER		
				Glass	Acrylic	Polycarbonate
4	Cvx. 20° Defl.	Clear	VA-(Color-Position Light)			P73-977
4	Cvx. Cover Plain	Frosted	Yard Indicator	P73-706		
3 5/16	Flat 25° Defl. and 8° Spred.	Clear	Searchlight	P76-450		
2 1/4	Flat 40° Defl.	Clear	Searchlight (Replacements)	P73-856		

*None of the roundels on this page requires a rubber gasket.

SEALING COMPOUND (90 B0010), 1/2 lb., for use in assembling outer lenses and roundels not requiring a rubber gasket. Cat. No. P73-182

Rubber Gaskets for Lenses and Roundels

DIA. OF LENS OR ROUNDEL	CATALOG NUMBER OF GASKET
4"	P73-995
5 3/8"	P73-996
5 1/2"	P73-997
6 3/8"	P73-998
8 3/8"	P73-999

CATALOG SECTION P73

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TYPES FA, D, G, ME, MF, MD & W SIGNALS

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P73-101			HANDRAIL COMPLETE	15
	314-146	2	HANDRAILS	
	314-143		HANDRAIL	
	317-41GR1		CLAMP	
	319-224	2	BRACES	
	09-2	8	BOLT & NUT	
P73-102			LADDER COMPLETE	12
	314-146	2	HANDRAILS	
	314-143		HANDRAIL	
	319-219	2	BRACES	
	319-220	2	BRACES	
	319-223	2	BRACES	
	319-224	2	BRACES	
	313-97GR1		PLATFORM	
	077-1	2	BOLT & NUT	
	312-125GR2		LADDER	
	312-125GR4		LADDER	
	315-120	2	STAYS	
	317-41GR1	3	CLAMPS	
	09-2	30	BOLT & NUT	
P73-104			HANDRAIL COMPLETE	12
	314-146	2	HANDRAILS	
	314-143		HANDRAIL	
	314-144	2	HANDRAILS	
	319-219	2	BRACES	
	319-220	2	BRACES	
	319-223	2	BRACES	
	319-224	2	BRACES	
	313-97GR1	2	PLATFORMS	
	077-1	2	BOLTS & NUTS	
	312-125GR4		LADDER	
	312-125GR5		LADDER	
	315-120	2	STAYS	
	317-41GR1	5	CLAMPS	
	09-2	38	BOLTS & NUTS	
P73-105	319-223		BRACE	15
P73-109	441-121		STUD	37
P73-110	441-483		STUD	33
P73-112	523-2		NUT	7
P73-113	651		PIN	7, 46
P73-114	786-137		SPRING	56
P73-115	924-4		GLASS	8, 24
P73-116	980-14		STUD	53
P73-117	980-102		STUD	9, 39
P73-118	0359		NUT	4
P73-119	0395-13		SCREW	55
P73-120	0396-5		SCREW	8
P73-121	0504-13		SCREW	
P73-122	0524-1		BOLT & NUT	8
P73-123	0525-2		BOLT & NUT	33
P73-124	03615-40		SCREW	17, 28
P73-125	0897-2		SCREW	53
P73-126	1482-1		BRACE	3
P73-127	1482-2		BRACE	3
P73-128	1601-64		WASHER	41
P73-129	1870		PIN	7, 46
P73-130	03606-16		SCREW	8
P73-133	2484-1		SCREW	8
P73-134	2484-2		SCREW	7
P73-135	03608-8		SCREW	56
P73-137	03608-16		SCREW	56
P73-139	03606-20		SCREW	34, 37
P73-140	3018-30		SCREW	41
P73-142	03610-110		SCREW	33, 37, 39
P73-143	03610-164		SCREW	41
P73-144	3092		SCREW	39
P73-145	5718-30		PLATE	4
P73-146	5718-39		PLATE	4
P73-148	7350-24		BUSHING	37
P73-149	7568		PIN	37
P73-150	8321-2		WASHER	7
P73-151	9238-2		ROUNDEL	41, 95
P73-152	9238-14		ROUNDEL	41, 95
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P73-155	9525-6		NUT	37
P73-156	10118-5		NUT	39
P73-158	12527-1		SCREW	4
P73-162	13014-331		GASKET	55

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TYPES FA, D, G, ME, MF, MD & W SIGNALS

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P73-163	14682-2		WASHER	17, 28
P73-164	15076-1GR8		DOOR	7
P73-165	15076-16GR1		DOOR	37
P73-166	15076-29GR1		DOOR	33
P73-170	15287-29		SCREW	56
P73-172	18118-1		NUT	7
P73-173	18281		PIN	53
P73-174	18547-15		CLIP	56
P73-175	18547-19		CLIP	56
P73-176	18547-48		CLIP	42
P73-177	18547-84		CLIP	16, 28
P73-180	03615-16		SCREW	17, 28,41
P73-181	21211-14		BASE	39
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P73-187	27470-8GR2		CASE	33
P73-188	27470-8GR4		CASE	33
P73-190	27470-8GR7		CASE	33
P73-196	29953		U BOLT	3
P73-197	30804-11		STRAP	7, 46
P73-198	31491-193		POLE	12
P73-199	31491-199		POLE	12
P73-201	35462		SPACER	56
P73-203	35660		WASHER	3
P73-204	36726-86		CASE	37
P73-206	36726-221		CASE	39
P73-207	36727-71		DOOR	39
P73-208	36731-30		BRACKET	7
P73-209	36731-4		BRACKET	7
P73-211	36761-2		PLATE	33
P73-212	36762-24GR2		LENS UNIT	55
P73-215	36762-50GR1		LENS UNIT	40
P73-216	36762-50GR2		LENS UNIT	40
P73-217	36762-50GR3		LENS UNIT	40
P73-218	36762-33GR4		LENS UNIT	40
P73-220	36762-33GR10		LENS UNIT	40
P73-231	39319-14		EYEBOLT	53
P73-233	41659-3GR8		CONDUIT	53
P73-234	41798		BOLT & NUT	7, 33
P73-237	43341		SCREW	56
P73-239	43718-4		RING	8, 24
P73-241	43983-38		RING	56
P73-243	43983-68		RING	41
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P73-245	43983-77		RING	42
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P73-247	43983-85		RING	17, 28
P73-248	43983-95		RING	42
P73-249	43983-110		RING	17, 28
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P73-253	43987-29		LENS	17, 28,56,92
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P73-255	43988-31		LENS	17, 28,41,92
P73-256	43988-32		LENS	17, 28,41,56,92
P73-257	03415-56		SCREW	42
P73-258	45572-28		SCREW	42
P73-259	03415-112		SCREW	42
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	5718-290		PLATE	
	56353-33		CONNECTOR	
	35132-32		ELBOW	
P73-261	46048-21GR3		TERM BLOCK	55
P73-263			TERMINAL BLOCK COMP DWG 46048-23 GR3	
	1225-2	18	WASHER	
	5971-19GR3		BLOCK	
	42843-1	12	NUT	
P73-264	46048-23GR4		TERM BLOCK	7

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CROSS - INDEX

TYPES FA, D, G, ME, MF, MD & W SIGNALS

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P73-265			BLOCK COMP 3 WAY DWG 46048-23 GR7	
	01251-4		KIT-Z	
	5971-19GR3		BLOCK	
	43587-6	3	CONN TERM BLK	
P73-270	46668-3GR5		BRACKET	7
P73-271	46723-1		ROUNDEL	56, 94
P73-272	46723-12		ROUNDEL	56, 94
P73-273	47154		NUT	53
P73-274	48118		NIPPLE	56
P73-275	01273-2		WASHER	8, 24, 38
P73-277	48561-8		SCREW	41
P73-279	48576-4		SCREW	8, 33, 45
P73-281	48848-5GR12		POLE & BASE	12
P73-282	48848-51GR13		POLE & BASE	12
P73-285	49120-3		SCREW	3
P73-286	49127-85		HOOD F/ TYPE D SIGNAL	8, 23
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P73-291	49162-112		BACKGROUND	3
P73-292	49162-111		BACKGROUND	3
P73-293	49162-26		BACKGROUND	53
P73-294	49162-90		BACKGROUND	53
P73-297	49163-1GR2		BACKGROUND	3
P73-298	49163-2GR2		BACKGROUND	3
P73-299	49163-3GR2		BACKGROUND	3
P73-300	49764		NUT	8
P73-301	50737-71		SHIELD	39
P73-302	51302-2		BLOCK	8
P73-303	51364		PLUG	8
P73-304	51432-71		STRAP	42
P73-305	51869-1		COVER	39
P73-306	52885-1GR6		SHIELD	37
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P73-311	53058 GR1		RECEPTACLE	55
P73-312	53058 GR3		RECEPTACLE	17, 28, 33, 45
P73-313	53071-50		CASE	37
P73-314	53071-73		CASE	37
P73-315	53105-2		SPRING	37
P73-316	53106-1		LATCH	37
P73-318	53114		CLIP	55
P73-319	53119-40		LENS	92
P73-322			W LIGHT UNIT	55
	53127-5GR1		W LIGHT UNIT	
	34866		LAMP	
P73-323			W LIGHT UNIT	55
	53127-5GR11		W LIGHT UNIT	
	34866		LAMP	
P73-325			W LIGHT UNIT	55
	53127-5GR26		W LIGHT UNIT	
	34866		LAMP	
P73-326			W LIGHT UNIT	55
	53127-5GR27		W LIGHT UNIT	
	34866		LAMP	
P73-329			W LIGHT UNIT	55
	53127-4GR9		W LIGHT UNIT	
	34866		LAMP	
P73-330	53126 GR2		CLAMP	53
P73-331	53128 GR1		RING	55
P73-333	53130-2GR2		COVER	55
P73-334	53131 GR4		CASE	55
P73-335	53133		CLAMP	53
P73-336	53134-2		ARM	53
P73-337	53137		BOLT	53
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P73-339	53141		SCREW	56

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TYPES FA, D, G, ME, MF, MD & W SIGNALS

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P73-340	53170-1		BRACKET	41
P73-341	53170-11		BRACKET	42
P73-342	53170-15		BRACKET	17, 28
P73-343	53879-21		SHIM	16, 28
P73-349	55243-20		GROMMET	56
P73-352	55945-1GR5		RESISTOR	55
P73-353	55945-1GR8		RESISTOR	7, 24, 33, 37, 55
P73-354	56629-1		PHANKILL	41
P73-355	59825-57		TERMINAL	34
P73-356	41895-1		NUT	8, 33, 45
P73-360	0390-1		BOLT	24
P73-361	0396-6		SCREW	23
P73-363	401-94		NAME PLATE	23
P73-368	3890-1		WASHER	29
P73-369	55243-32		GROMMET	24
P73-372	13324		WASHER	29
P73-374	15076-23GR2		DOOR	23
P73-376	16663-5GR1		HASP	23
P73-378	27440-1		SCREW	29
P73-380	27470-29GR2		CASE	23
P73-383	36762-39GR1		LENS UNIT	27
P73-384	36762-39GR2		LENS UNIT	27
P73-385	36762-39GR3		LENS UNIT	27
P73-386	36762-39GR5		LENS UNIT	27
P73-396	39719-56		DISC	23
P73-397	39719-43		DISC	24
P73-400	45818-1		EYEBOLT	23
P73-401	49092-137		BRACKET	29
P73-402	49102-8GR1		RECEPTACLE	29
P73-403	29757-39		BOLT	23
P73-404	49163-23GR2		BACKGROUND	23
P73-405	50737-1		SHIELD	24
P73-406	50737-2		SHIELD	24
P73-407	51120-7GR3		SIGHT	23
P73-410	51869-2		COVER	24
P73-411	54392		SCREW	23
P73-412	03604-4		SCREW	24
P73-413	55260		HANDLE	23
P73-414			ROUNDEL ASSEMBLY	
	9238-108		ROUNDEL	
	43983-85		RING	
	0660-1	4	SCREW	
	53029-75	4	WASHER	
	(SEE A73)			
P73-415			ROUNDEL ASSEMBLY FOR D SIGNAL	
	53142-1		ROUNDEL	
	43983-85		RING	
	0660-1	4	SCREW	
	53029-75	4	WASHER	
	(SEE A73)			
P73-417			ROUNDEL ASSEMBLY FOR MD & ME SIGNALS	
	9238-14		ROUNDEL	
	13014-459		GASKET	
	43983-68		RING	
	0504-13	4	SCREW	
	01273-6	4	WASHER	
	(SEE A73)			
P73-418			ROUNDEL ASSEMBLY FOR MD & ME SIGNALS	
	9238-65		ROUNDEL	
	13014-459		GASKET	
	43983-68		RING	
	0504-13	4	SCREW	
	01273-6	4	WASHER	
	(SEE A73)			
P73-419			ROUNDEL ASSEMBLY FOR FA & ME SIGNALS	
	9238-14		ROUNDEL	
	13014-459		GASKET	
	43983-68		RING	
	45572-28	4	SCREW	
	01273-6	4	WASHER	
	(SEE A73)			

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TYPES FA, D, G, ME, MF, MD & W SIGNALS

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P73-420			ROUNDEL ASSEMBLY FOR FA & ME SIGNALS	
	9238-65		ROUNDEL	
	13014-459		GASKET	
	43983-68		RING	
	45572-28	4	SCREW	
	01273-6	4	WASHER	
	(SEE A73)			
P73-425			PHANKILL ASSEMBLY FOR MD & ME ASSEMBLIES	
	53119-37		LENS	
	56629-1		PHANKILL	
	9238-2		ROUNDEL	
	13014-459	2	GASKET	
	48561-8	4	SCREW	
	01273-6	4	WASHER	
	03610-164	2	SCREW	
	01273-4	2	WASHER	
	3018-30		SCREW	
	01272-7		NUT	
	43983-75		RING	
	51432-71		STRAP	
	13014-459	2	GASKET	
	(SEE A73)			
P73-426			PHANKILL ASSEMBLY FOR FA & ME SIGNALS	
	53119-37		LENS	
	56629-1		PHANKILL	
	9238-2		ROUNDEL	
	13014-459	2	GASKET	
	45572-31	4	SCREW	
	01273-6	4	WASHER	
	03610-164	2	SCREW	
	01273-4	2	WASHER	
	3018-30		SCREW	
	01272-7		NUT	
	43983-75		RING	
	51432-71		STRAP	
	13014-459	2	GASKET	
	(SEE A73)			

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P73-427	15287-7		SCREW	17, 29
P73-703	9238-68		ROUNDEL	95
P73-705	9238-86		ROUNDEL	95
P73-706	9238-88		ROUNDEL	96
P73-725	31624		LENS	93
P73-726	31624-6		LENS	93
P73-727	31624-7		LENS	93
P73-728	31624-8		LENS	93
P73-729	31624-15		LENS	93
P73-736	43987-2		LENS	92
P73-737	43987-13		LENS	92
P73-739	43987-16		LENS	92
P73-745	43988-34		LENS	92
P73-746	43988-33		LENS	28, 92
P73-755	45926-1		LENS	93
P73-757	45926-3		LENS	93
P73-763	45930		LENS	93
P73-764	45930-1		LENS	93
P73-772	46723-4		ROUNDELS	94
P73-773	46723-9		ROUNDEL	94
P73-865	56901		LENS	93
P73-866	56901-1		LENS	93
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P73-868	56901-3		LENS	93
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P73-902	1411-12		SCREW	46
P73-903	3034-3		SCREW	46
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P73-905			PEDESTAL	45
	57452-2GR1		ADAPTER	
	18006-1		PEDESTAL	
P73-906	21211-12		BASE	45

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TYPES FA, D, G, ME, MF, MD & W SIGNALS

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P73-907			CASE P73-907 27470-5 GR 1	45
	36726-20		CASE	
	36727-10		DOOR	
	43460-12	3	GASKET	
	50737-3	2	SHIELD	
	35497		HASP	
	30804-11		STRAP	
	16914-16		STAPLE	
	1870		PIN	
	651		PIN	
	7828	2	PIN	
	48576-4	4	SCREW	
	41895-1	4	NUTS	
P73-908	35497		HASP	46
P73-909	36727-10		DOOR	45
P73-910	36762-9GR5		LENS UNIT	45
P73-911	36762-9GR6		LENS UNIT	45
P73-912	36762-9GR7		LENS UNIT	45
P73-913	36762-9GR8		LENS UNIT	45
P73-914	40426-2		SCREW	46
P73-915	43983-5		RING	46
P73-916	43983-20		RING	46
P73-917	43983-21		RING	46
P73-918	44515-1		CONNECTOR	45
P73-919	45955-14		PLATE	46
P73-920	48885-6		DISC	46
P73-921	49092-6		BRACKET	46
P73-922	51041-5		WASHER	45
P73-923	52084 GR3		TERMINAL BLOCK	45
P73-924	57452-2GR1		ADAPTER	46
P73-926	49102-8GR2		RECEPTACLE	29
P73-932	43987-23		LENS	92
P73-934	01079-1		ROUNDEL	94
P73-936	53119-28		ROUNDEL	95
P73-939	43987-24		LENS	92
P73-940	43987-25		LENS	92
P73-941	43987-26		LENS	92
P73-942	43987-27		LENS	92
P73-944	53119-36		LENS	92
P73-945	53119-37		LENS	92
P73-946	53119-38		LENS	41, 92
P73-947	53119-39		LENS	92
P73-948	43988-25		LENS	92
P73-949	43988-26		LENS	92
P73-950	43988-27		LENS	92
P73-951	43988-28		LENS	92
P73-952	43988-29		LENS	92
P73-953	45699-7		LENS	92
P73-954	56902-28		LEXAN LENS	93
P73-956	01079-3		ROUNDEL	94
P73-957	01079-9		ROUNDEL	94
P73-958	9238-108		ROUNDEL	94
P73-959	53119-35		ROUNDEL	95
P73-960	46723-16		ROUNDEL	94
P73-961	46723-17		ROUNDEL	94
P73-962	46723-18		ROUNDEL	94
P73-963	46723-19		ROUNDEL	94
P73-967	53142-24		ROUNDEL	94
P73-968	9238-111		ROUNDEL	95
P73-969	9238-112		ROUNDEL	95
P73-970	9238-113		ROUNDEL	95
P73-971	9238-114		LENS	95
P73-972	9244-18		ROUNDEL	95
P73-973	9244-19		ROUNDEL	95
P73-974	9244-20		ROUNDEL	95
P73-975	47585-6		LENS	92
P73-977	9238-110		ROUNDEL	96
P73-995	13014-456		GASKET	96
P73-996	13014-457		GASKET	96
P73-997	13014-458		GASKET	96
P73-998	13014-459		GASKET	96
P73-999	13014-460		GASKET	96
P73-1000	45926-15		LENS	93
P73-1001	45926-16		LENS	93
P73-1002	45926-17		LENS	93
P73-1003	45926-18GR10		LENS	93
P73-1005	01263-3		PUSHBUTTON (SEE A73)	
P73-1006	49127-88		HOOD (SEE A73)	
P73-1010	43987-11		LENS	92
P73-1011	54249-6		LENS	92
P73-1012	54264-4		LENS	92
P73-1013	31624-1		LENS	93
P73-1014	31624-41		LENS	93
P73-1015	15251-6		LENS	93
P73-1016	15251-7		LENS	93
P73-1017	54264-13		ROUNDEL	94
P73-1018	53142-23		ROUNDEL	94
P73-1019	01079-8		ROUNDEL	94

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TYPES FA, D, G, ME, MF, MD & W SIGNALS

CAT.NO.	DRAWING NO.	QTY	NAME	PG.	CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P73-1020	53142-12		ROUNDEL	94					
P73-1021	9238-4		ROUNDEL	95					
P73-1022	9244-22		ROUNDEL	95					
P73-1023	9244-21		ROUNDEL	95					

CATALOG SECTION P76

PARTS LIST

Searchlight Signals

Type SA and SA-1

FOR ASSEMBLIES, SEE CATALOG SEC. 76

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Mechanisms Type SA-1	14
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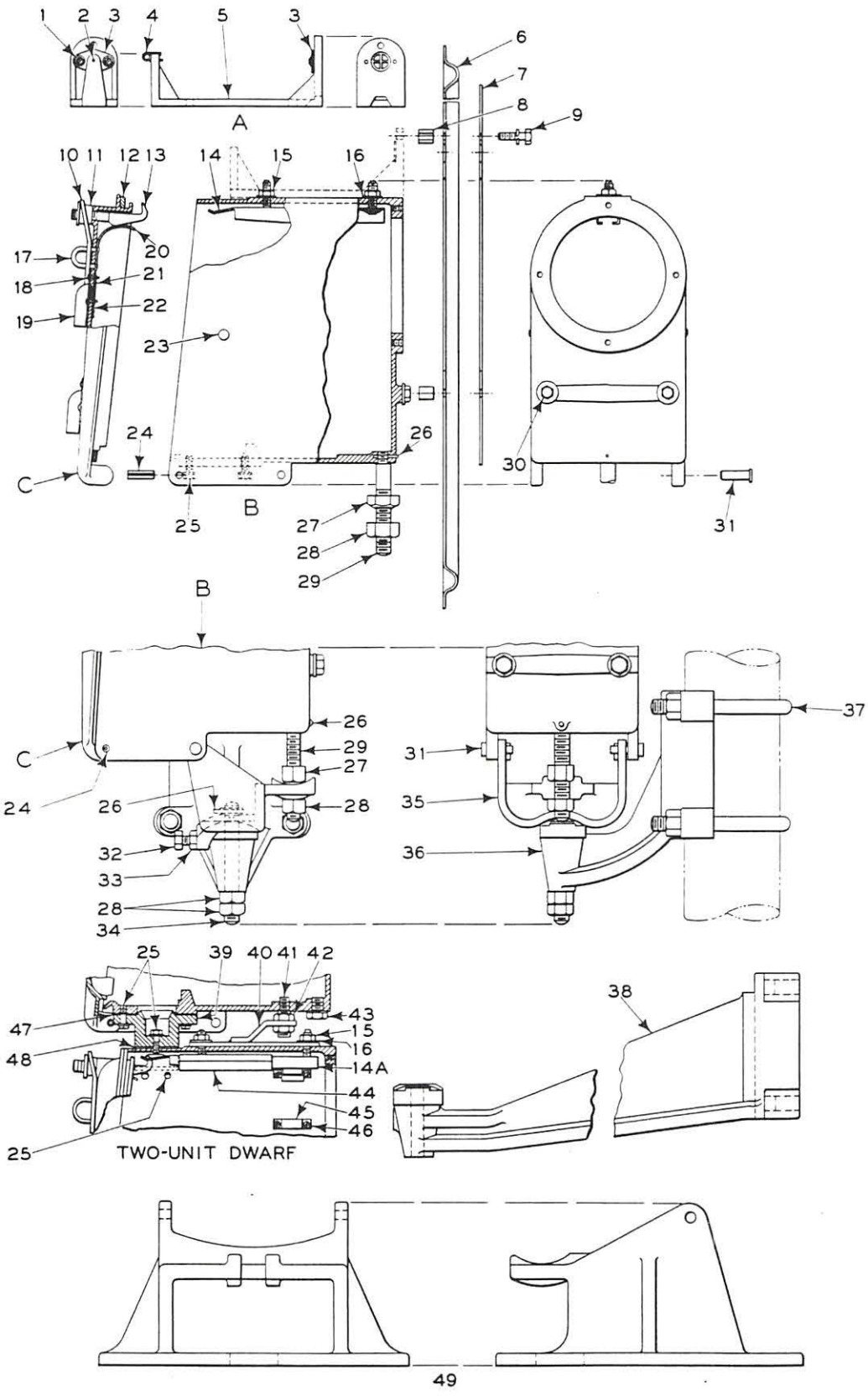
GENERAL RAILWAY SIGNAL COMPANY

A UNIT OF GENERAL SIGNAL

ROCHESTER NEW YORK 14602

PRINTED IN U.S.A.



Types SA and SA-1 signal.

Types SA and SA-1 Signal

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	SIGHT COMPLETE, for high signals	P76-381
B	CASE, only, with studs for cams of mechanism, for all single-unit high and dwarf signals	P76-435
B1	As above, except for upper unit of two-unit dwarf signal.	P76-436
B2	Same as Ref. B, except for lower unit of two-unit dwarf	P76-437
C	DOOR COMPLETE, includes gasket, latch hasp, ventilators and all riveted parts	P76-393
1	SCREW, for plate	P85-234
1A	WASHER, for above	P76-246
2	PLUG, for sight	P76-384
3	PLATE, for sight	P76-419
4	SPRING, to keep rear sight open	P76-238
5	FRAME, only	P76-382
6	BACKGROUND, 2' - 11" dia.	P76-374
7	BACKGROUND, 20" dia.	P76-375
8	SPACER, for background on stepped lens signals	P76-420
8A	As above, except for background on compound lens signal	P76-421
9	SCREW, for spacer Ref. 8	P85-229
9A	SCREW, for spacer Ref. 8A	P76-256
9B	WASHER, lock, for above.	P85-122
10	HASP, wrench	P76-273
11	NUT, for hasp	P76-274
12	GASKET, 3' - 3" long, for door, specify number feet	P76-336
13	LATCH, for door	P76-417
14	SLIDE COMPLETE, for single-unit signals	P76-457
14A	As above, except for two-unit dwarf signals	P76-458
15	NUT, for slide	P81-127
16	WASHER, for nut Ref. 15	P50-743
17	STAPLE, for door	P85-312
18	SCREW, for ventilators	P50-249
19	HOOD, for ventilators	P50-205
20	SPRING, for door	P76-416
21	PLATE, for screen	P50-206
22	SCREEN, for ventilator	P50-207
23	STUD, for cams	P76-232
24	PIN, roll, for hinging door	P76-117

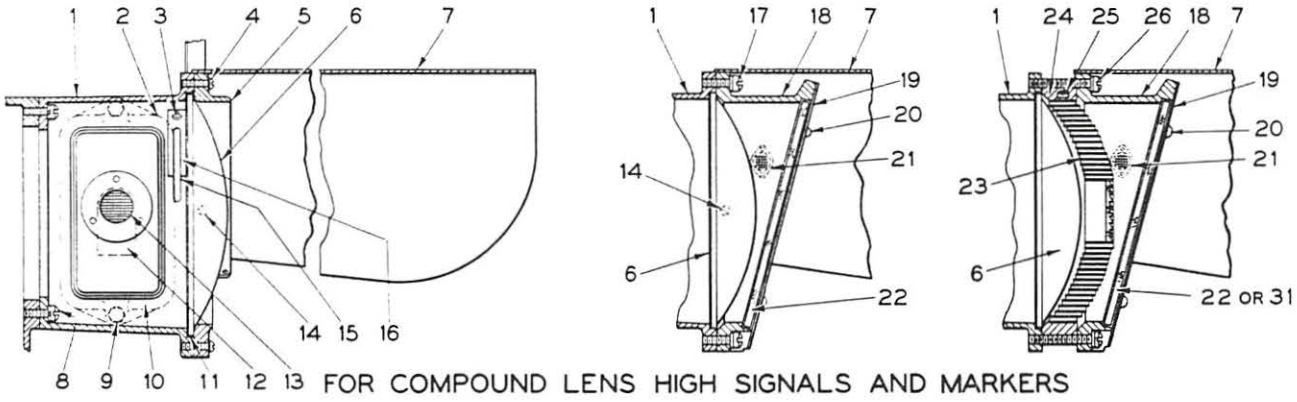
Types SA and SA-1 Signal

Parts List

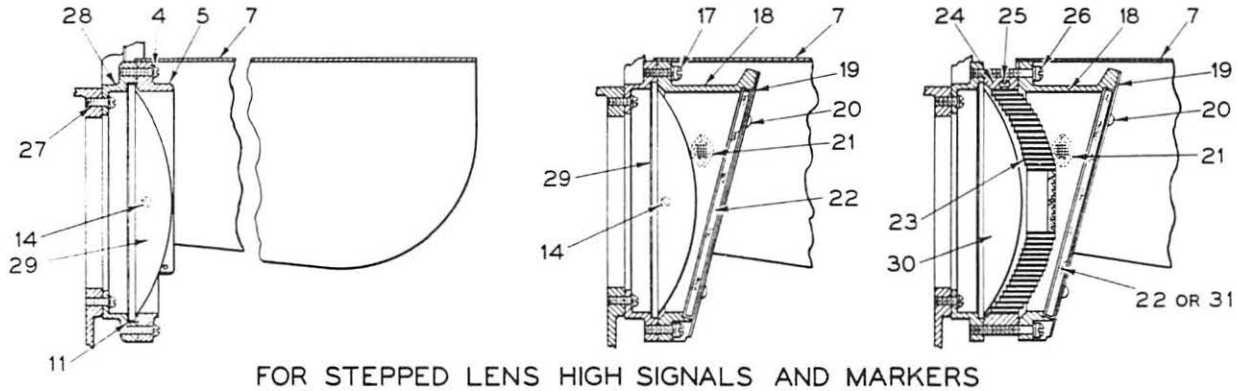
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
25	SCREW, for fastening coupling to case also for fastening bracket Ref. 39 to case	P50-722
25A	WASHER, lock, for above	P76-106
26	PIN, roll, for fastening adjusting stud to case	P76-116
27	NUT, for adjusting stud	P76-101
28	NUT, for locking adjustment.	P76-105
29	STUD, adjusting, 5-5/8" long	P76-104
29A	As above, except 4-15/16" long, for marker light	P76-244
30	SCREW, for case, when background is not used	P76-203
30A	WASHER, lead, for above	P50-743
31	PIN, for fastening case to base or bracket	P76-102
32	SCREW, for locking stud Ref. 34	P76-326
33	NUT, for screw Ref. 32	P76-271
34	STUD, for bracket Ref. 36	P76-243
35	BRACKET, for supporting signal	P76-411
36	BRACKET, for side-of-mast mounting	P76-413
37	U BOLT COMPLETE, for mounting bracket Ref. 36 or 38 to 5" mast	P76-289
38	BRACKET, for front-of-mast mounting.	P76-412
39	BRACKET, for use between upper and lower units	P76-296
40	BRACKET, front.	P76-453
41	STUD, for adjusting top unit.	P76-242
42	NUT, for above.	P76-285
43	SCREW, for case	P76-270
43A	WASHER, lock, for above	P26-156
44	CHASE, wire	P76-452
45	BRACKET, for wires	P76-327
46	SCREW, for brackets Ref. 45	P76-109
47	GASKET, for use between bracket and upper unit.	P76-279
48	GASKET, for use between bracket and lower unit.	P76-280
49	BASE, only.	P76-404

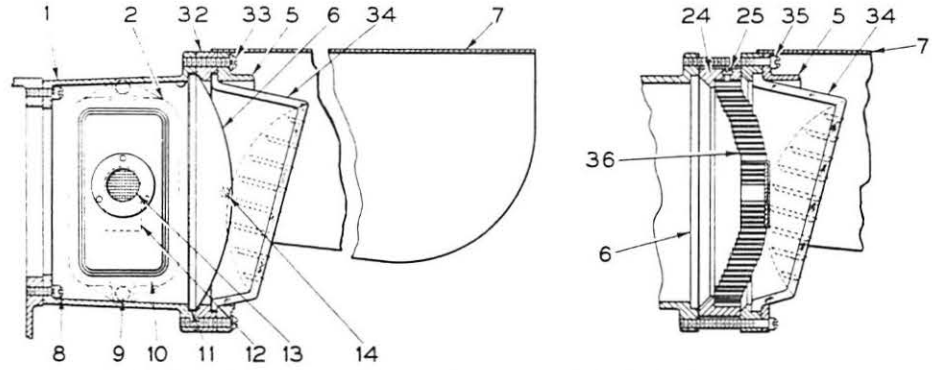
Memoranda



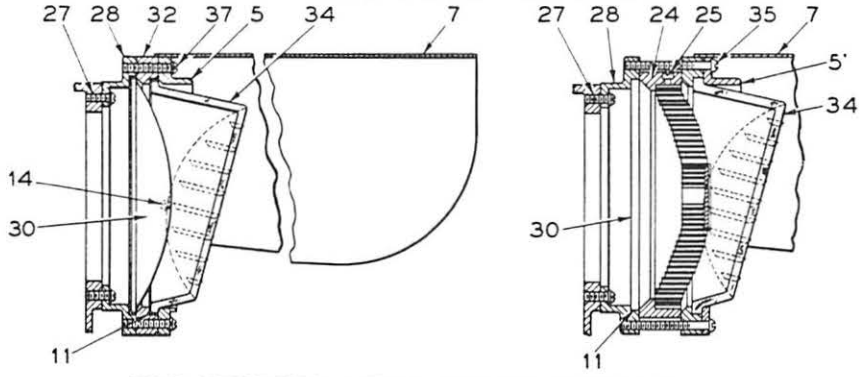
FOR COMPOUND LENS HIGH SIGNALS AND MARKERS



FOR STEPPED LENS HIGH SIGNALS AND MARKERS



FOR COMPOUND LENS DWARF SIGNALS



FOR STEPPED LENS DWARF SIGNALS

Lenses, roundels and hoods.

Lenses, Roundels and Hoods

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	RING COMPLETE, with adapter and cover, for compound lens signals	P76-466
1A	ADAPTER, only, for above	P76-445
2	COVER COMPLETE, with ventilator hood	P76-313
3	SCREW, for holder	P76-258
3A	WASHER, lock, for above	P62-334
4	SCREW, for fastening ring to adapter	P76-127
4A	WASHER, lock, for above	P76-106
5	RING, for hood	P76-348
6	LENS, outer, 8-3/8" dia., 11-1/2" focus	P76-149
6A	As above, except with gasket	P76-442
7	HOOD, 15" long	P76-135
8	SCREW, for fastening adapter to signal case	P76-290
8A	WASHER, lock, for above	P76-106
9	SCREW, for fastening cover to adapter	P85-229
9A	WASHER, lock, for above	P85-122
10	GASKET, 19-3/4" long, for cover. Specify number feet	P76-132
11	GASKET, for lens	P73-160
12	HOOD, for ventilator	P50-205
12A	SCREW, for above	P50-249
13	SCREEN, for ventilator	P50-207
13A	PLATE, for screen	P50-206
14	SCREW, for fastening hood to ring	P76-109
15	ROUNDEL, 3-5/16" dia., with deflecting prisms	P76-450
16	HOLDER, for roundel	P76-446
17	SCREW, for fastening bezel ring to adapter	P85-920
17A	WASHER, lock, for above	P76-106
18	RING, bezel, for flat roundel	P76-467
19	RING, for flat roundel	P76-255
20	SCREW, for ring Ref. 19	P76-262
20A	WASHER, lock, for above	P81-121
21	VENTILATOR	P76-380
21A	SCREW, for above	P76-387
22	ROUNDEL, clear, flat 20 degree deflecting	P76-448
22A	As above, except 30 degree Spredlite	P76-449
23	PHANKILL UNIT, with 25 degree close-up prism, for high signals	P76-465
24	RING, for Phankill unit	P76-347

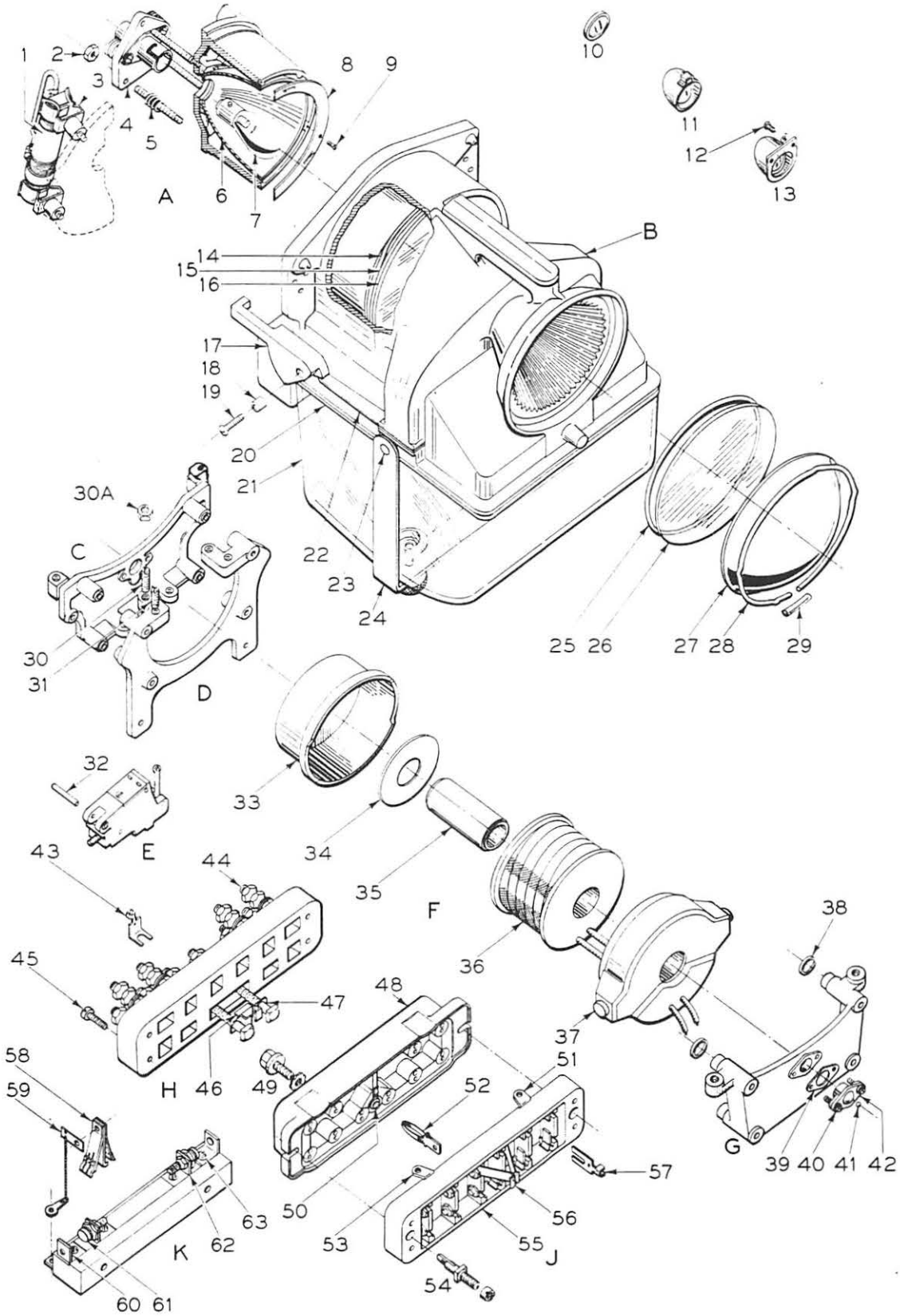
Lenses, Roundels and Hoods

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
25	SCREW, for fastening Phankill unit to ring	P76-231
26	SCREW, for fastening rings to adapter	P76-321
26A	WASHER, lock, for above	P76-106
27	SCREW, for fastening ring to signal case	P76-309
27A	WASHER, lock, for above	P76-106
28	RING, for lens Ref. 29.	P76-345
29	LENS, outer, 8-3/8" dia., 5" focus, clear, with 40 degree deflecting bullseye	P76-324
29A	As above, except with gasket	P76-441
30	LENS, outer, 8-3/8" dia., 5" focus, with clear bullseye, for use with Phankill unit	P76-323
30A	As above, except with gasket	P76-489
31	ROUNDEL, flat, plain, for use with Phankill unit	P76-264
32	RING, for roundel	P76-346
33	SCREW, for fastening rings to adapters.	P76-310
33A	WASHER, lock, for above	P76-106
34	ROUNDEL, "V" shaped, 8-3/8" dia., deflects part of main beam upward through an angle of 10 degrees.	P76-284
35	SCREW, for fastening ring and Phankill unit to adapter.	P76-312
36	PHANKILL UNIT, for dwarf signals	P76-464
37	SCREW, for fastening rings to signal case	P76-311
37A	WASHER, lock, for above	P76-106

Memoranda



Type SA signal mechanism.
(For replacement parts only.)

Type SA Signal Mechanism

Parts List
(For Replacement Parts Only)

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	REFLECTOR HOLDER COMPLETE, with leads for 1/4" terminal posts on block Ref. H, for stepped lens signals	P76-530
A1	As above, except for compound lens signals with 5-1/2" focus	P76-531
A2	Same as Ref. A, except for compound lens signals with 6-1/2" focus	P76-532
A3	Ref. A, except with leads for 3/16" terminal posts on plug coupler Ref. J, for stepped lens signals	P76-535
A4	Same as Ref. A3, except for compound lens signals with 5-1/2" focus.	P76-536
A5	Same as Ref. A3, except for compound lens signals with 6-1/2" focus.	P76-537
B	CASE COMPLETE, for operating mechanism, includes all parts except Refs. 20 and 21	P76-428
B1	As above, except without stirrup for inoperative mechanism	P76-429
C	BRACKET, for supporting armature	P76-399
D	BRACKET, only	P76-400
E	COUNTERWEIGHT	P76-434
F	COIL COMPLETE, 250 ohms resistance, includes bakelite shell, has leads for attaching to terminal block Ref. H	P76-425
F1	As above, except with leads for attaching to plug coupler Ref. J	P76-426
G	BRACKET, only, for supporting armature (must be used with four washers Ref. 38)	P76-401
H	TERMINAL BLOCK COMPLETE, ten posts	P76-398
J	PLUG COUPLER COMPLETE, for ten terminals	P76-490
K	BLOCK COMPLETE, with contacts and terminal posts	P76-390
1	RESISTANCE UNIT COMPLETE, 1 ohm, 2.5 amps. max.	A76-330
1A	As above, except 2 ohms, 1.75 amps. max.	A76-331
1B	Same as Ref. 1, except 5 ohms, 1.0 amp. max.	A76-332
2	NUT, elastic stop, for studs on reflector	P76-333
3	CLIP, for resistance unit	P76-209
4	RECEPTACLE COMPLETE, with leads for 1/4" posts	P76-395
4A	As above, except with leads for 3/16" posts	P76-396
5	SPRING, for receptacle.	P76-237
6	REFLECTOR, with felt washer.	P76-154
7	LAMP, incandescent, see Section 46, for ordering information	
8	RETAINER, for reflector.	P76-363
9	SCREW, for retainer	P76-320
10	DISC COMPLETE, color, yellow, with one side depolished, AAR Standard, assembled in retaining cup.	P76-407
10A	As above, except, green, pre-cracked, AAR Standard	P76-406
11	DISC COMPLETE, color, inclined, with red AAR Standard color disc	P76-408

Type SA Signal Mechanism
Parts List
(For Replacement Parts Only)
Order by catalog number and name shown in bold type

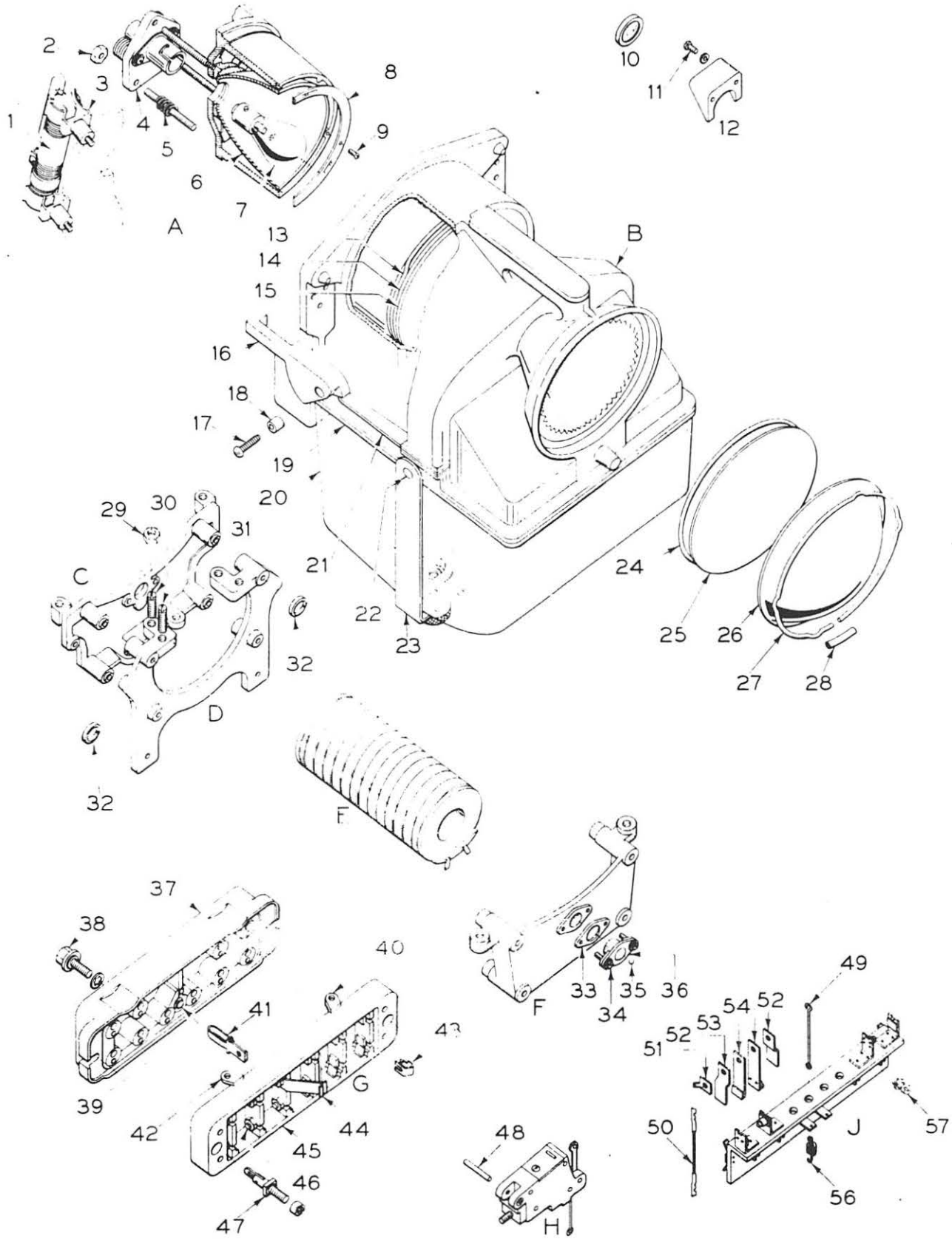
REF.	NAME	CATALOG NUMBER
12	SCREW, for color disc Ref. 13	P76-260
12A	WASHER, lock, for above	P65-728
13	DISC COMPLETE, color, inclined, red, for inoperative mechanism	P76-491
14	SPRING, for glass Ref. 15	P76-141
14A	SLEEVE, for above	P76-287
15	GLASS, for reflector unit	P76-103
16	GASKET, for glass	P76-143
17	CAM, right-hand	P76-430
17A	As above, except left-hand	P76-431
18	BUSHING, for screw Ref. 19	P76-308
19	SCREW, self-tapping, for cams	P76-451
19A	As above, except 1/4" - 20 for earlier design mechanisms	P76-433
20	GASKET, for glass case	P76-115
21	CASE, glass, for mechanism	P76-128
22	SPRING, right-hand, for cam	P76-282
22A	As above, except left-hand	P76-281
23	STUD, for stirrup	P76-233
24	STIRRUP, for supporting glass case	P76-432
25	GASKET, for glass Ref. 26 or lens Ref. 27	P76-389
26	GLASS, cover, outer, for stepped lens signals	P76-241
27	LENS, 4-1/2" dia., 6-1/2" focus, for compound lens signals	P76-150
27A	As above, except 5 1/2" focus	P76-447
28	SPRING, for glass or lens	P76-142
29	SLEEVE, for springs Ref. 14 and 28	P76-287
30	SCREW, 5/8" headless, stop for counterweight	P76-268
30A	NUT, for screws Refs. 30 and 31	P62-410
31	SCREW, 7/8" headless, stop for armature	P76-267
32	PIN, for counterweight	P76-261
33	SHELL, bakelite, one-half	P76-403
34	WASHER, felt, for coil	P76-263
35	TUBE, for coil	P76-409
36	COIL, only, 250 ohms resistance	P76-298
37	SHELL, bakelite, one-half	P76-402
38	WASHER, spacer, for bracket	P76-248
39	SHIM, .005" thick, for bearing	P76-439
39A	As above, except .003" thick	P76-440

Type SA Signal Mechanism

Parts List
(For Replacement Parts Only)

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
40	SCREW, for fastening bearing to bracket.	P76-438
41	BALL, for each end of armature shaft	P62-301
42	BEARING COMPLETE, knife-edge, for armature shaft	P76-488
43	TERMINAL, offset	P76-423
44	SCREW, used as terminal post	P76-100
44A	NUT, 5/16" thick, for above	P76-131
44B	NUT, 3/16" thick, for above	P62-333
44C	WASHER, for above.	P76-108
45	SCREW, for mounting terminal block	P62-215
46	PLATE, carborundum	P76-329
47	CONNECTOR, for plate	P76-265
48	PLUGBOARD, front half	P76-454
49	SCREW, insulated head	P65-784
49A	WASHER, lock, for above	P81-206
50	STUD, for lightning protection	P76-234
50A	CLIP, for above.	P76-292
51	TERMINAL, left-hand	P76-385
52	CONTACT, only.	P76-456
53	TERMINAL, right-hand.	P76-386
54	POST, only	P76-335
54A	NUT, spanner, for above.	P65-588
54B	PIN, lock, for above	P76-272
55	PLUGBOARD, only, rear half	P76-455
56	CONTACT, spring	P76-288
57	TERMINAL, straight	P76-424
58	FINGER COMPLETE, right or left-hand.	P76-397
59	CONNECTOR, for finger	P76-414
60	CONTACT, back, two required.	P76-283
61	CONTACT, front, two required	P76-334
62	TERMINAL, for contacts.	P76-383
63	SCREW, for mounting contacts and terminals	P76-230
63A	NUT, for above	P76-129
63B	WASHER, for above.	P76-247



Type SA-1 signal mechanism.

Type SA-1 Signal Mechanism

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	REFLECTOR HOLDER COMPLETE, for stepped lens signals	P76-535
A1	As above, except for compound lens signals with 5-1/2" focus, for serial nos. 2000 and up	P76-536
A2	Same as Ref. A, except for compound lens signals with 6-1/2" focus, for serial nos. up to 1999	P76-537
B	CASE COMPLETE, for operating mechanism, includes all parts except Refs. 19 and 20	P76-522
C	BRACKET, for supporting armature	P76-399
D	BRACKET, only	P76-400
E	COIL COMPLETE, 250 ohms resistance	P76-525
F	BRACKET, only, for supporting armature	P76-401
G	PLUG COUPLER COMPLETE, for ten terminals	P76-524
H	COUNTERWEIGHT	P76-523
J	CONTACT GROUP, with contacts and terminals	P76-526
1	RESISTANCE UNIT COMPLETE, 1 ohm, 2.5 amps. max.	A76-330
1A	As above, except 2 ohms, 1.75 amps. max	A76-331
1B	Same as Ref. 1, except 5 ohms, 1.0 amp. max	A76-332
2	NUT, elastic stop, for studs on reflector	P76-333
3	CLIP, for resistance unit	P76-209
4	RECEPTACLE COMPLETE, with leads for 3/16" posts	P76-396
5	SPRING, for receptacle	P76-237
6	REFLECTOR, with felt washer	P76-154
7	LAMP, incandescent, see Section 46, for ordering information	
8	RETAINER, for reflector	P76-363
9	SCREW, for retainer	P76-320
10	DISC COMPLETE, color, yellow, with one side depolished, AAR Standard, assembled in retaining cup	P76-407
10A	As above, except, green, pre-cracked, AAR Standard	P76-406
10B	Same as Ref. 10, except with red AAR Standard color disc	P76-405
11	SCREW, for hood	P76-512
11A	WASHER, lock, for above	P76-513
12	HOOD,	P76-511
13	SPRING, for glass Ref. 14	P76-141
13A	SLEEVE, for above	P76-287
14	GLASS, for reflector unit	P76-103
15	GASKET, for glass	P76-143
16	CAM, right-hand	P76-430
16A	As above, except left-hand	P76-431

Type SA-1 Signal Mechanism

Parts List

Order by catalog number and name shown in bold type

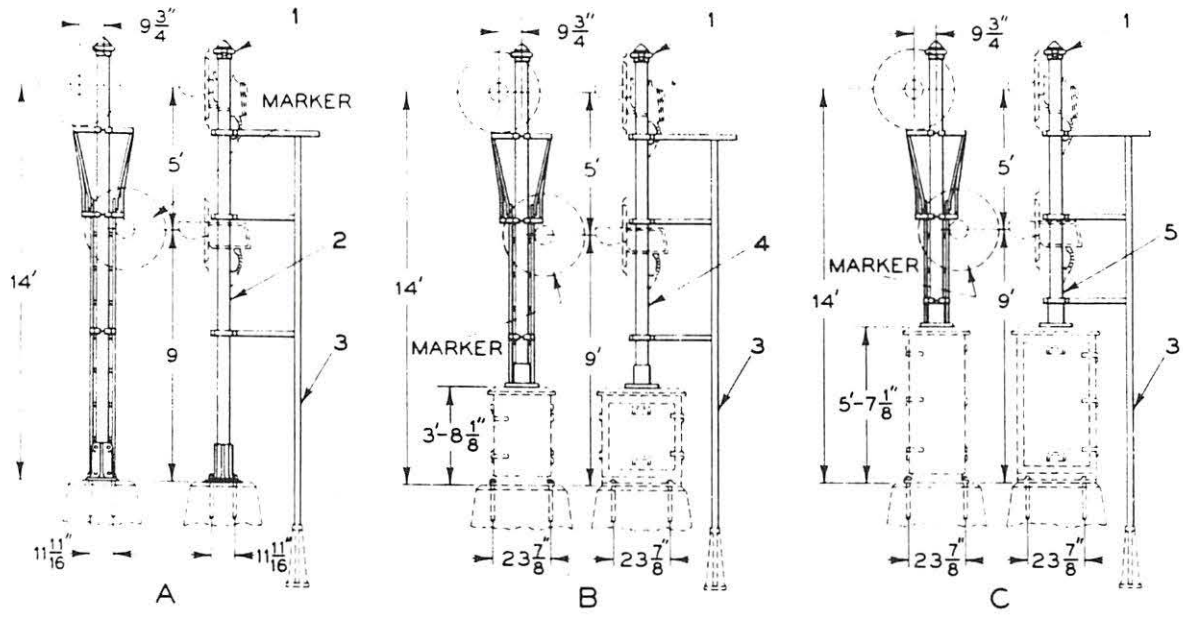
REF.	NAME	CATALOG NUMBER
17	SCREW, self-tapping, for cams	P76-451
18	BUSHING, for screw Ref. 17	P76-308
19	GASKET, for glass case	P76-115
20	CASE, glass, for mechanism	P76-128
21	SPRING, right-hand, for cam	P76-282
21A	As above, except left-hand	P76-281
22	STUD, for stirrup	P76-233
23	STIRRUP, for supporting glass case	P76-432
24	GASKET, for glass Ref. 25 or lens Ref. 26	P76-389
25	GLASS, cover, outer, for stepped lens signals	P76-241
26	LENS, 4-1/2" dia., 6-1/2" focus, for compound lens signals	P76-150
26A	As above, except 5 1/2" focus	P76-447
27	SPRING, for glass or lens	P76-142
28	SLEEVE, for springs Ref. 13 and 27	P76-287
29	NUT, for screws Refs. 30 and 31	P62-410
30	SCREW, 5/8" headless, stop for counterweight	P76-268
31	SCREW, 7/8" headless, stop for armature	P76-267
32	WASHER, spacer, for bracket	P76-248
33	SHIM, .005" thick, for bearing	P76-439
33A	As above, except .003" thick	P76-440
34	SCREW, for fastening bearing to bracket	P76-438
35	BALL, for each end of armature shaft	P62-301
36	BEARING COMPLETE, knife-edge, for armature shaft	P76-488
37	PLUGBOARD, front half	P76-454
38	SCREW, insulated head	P65-784
38A	WASHER, lock, for above	P81-206
39	STUD, for lightning protection	P76-234
39A	CLIP, for above	P76-292
39B	CONNECTOR, for above	P76-508
40	TERMINAL, left-hand	P76-385
41	CONTACT, only	P76-456
42	TERMINAL, right-hand	P76-386
43	TERMINAL	P76-509
44	CONTACT, spring	P76-288
45	PLUGBOARD, only, rear half	P76-455
46	SCREW, for contact Ref. 41	P76-515
46A	NUT, for above	P76-129

Type SA-1 Signal Mechanism

Parts List

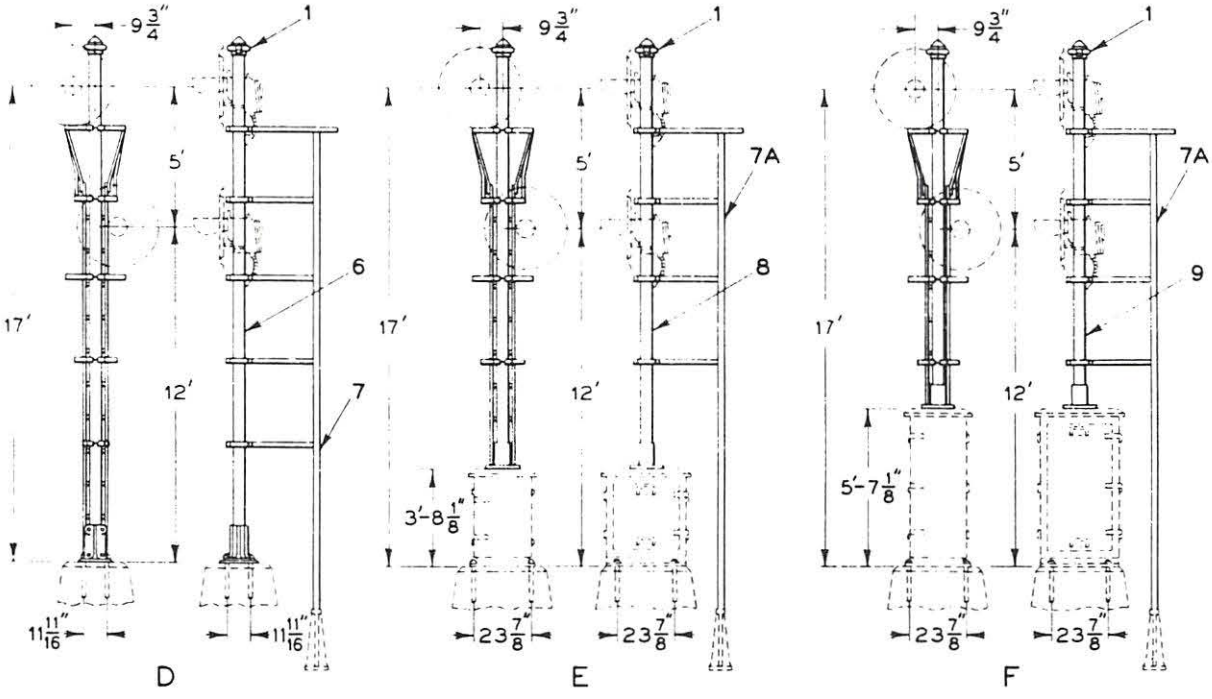
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
46B	WASHER, lock, for above	P62-401
47	POST, only	P76-335
47A	NUT, spanner, for above	P65-588
47B	PIN, lock, for above	P76-272
48	PIN, for counterweight	P76-261
49	LINK, for counterweight	P76-517
50	CONNECTOR, 2-9/16" long	P76-519
51	TERMINAL, for contacts	P76-514
52	STOP, for fingers	P76-516
53	FINGER COMPLETE	P76-521
54	FINGER COMPLETE	P76-520
56	SPRING	P76-510
57	SCREW, for mounting contact group	P62-218

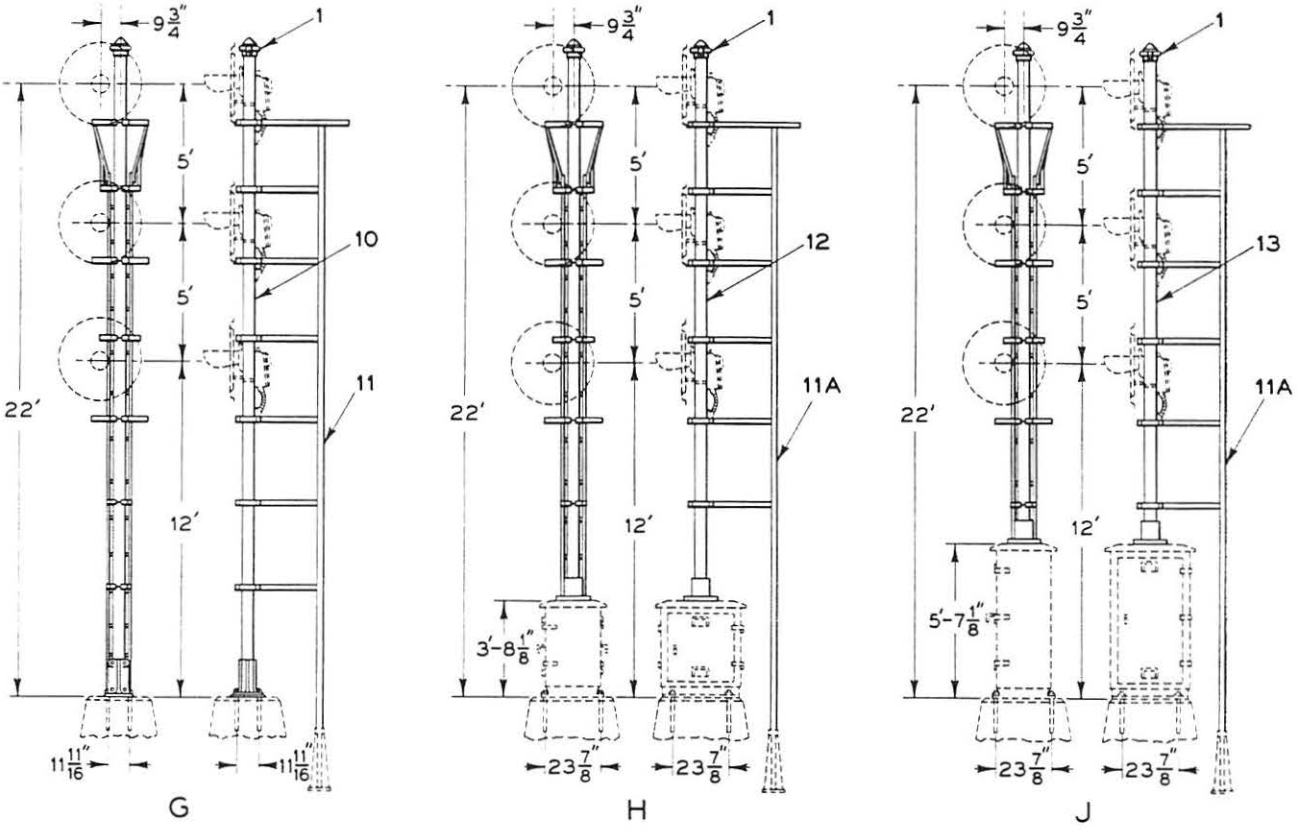


SIGNAL MAST ASSEMBLIES
FOR BASES, SEE PAGE 20

(ALL MAST HEIGHTS ARE APPROXIMATE)

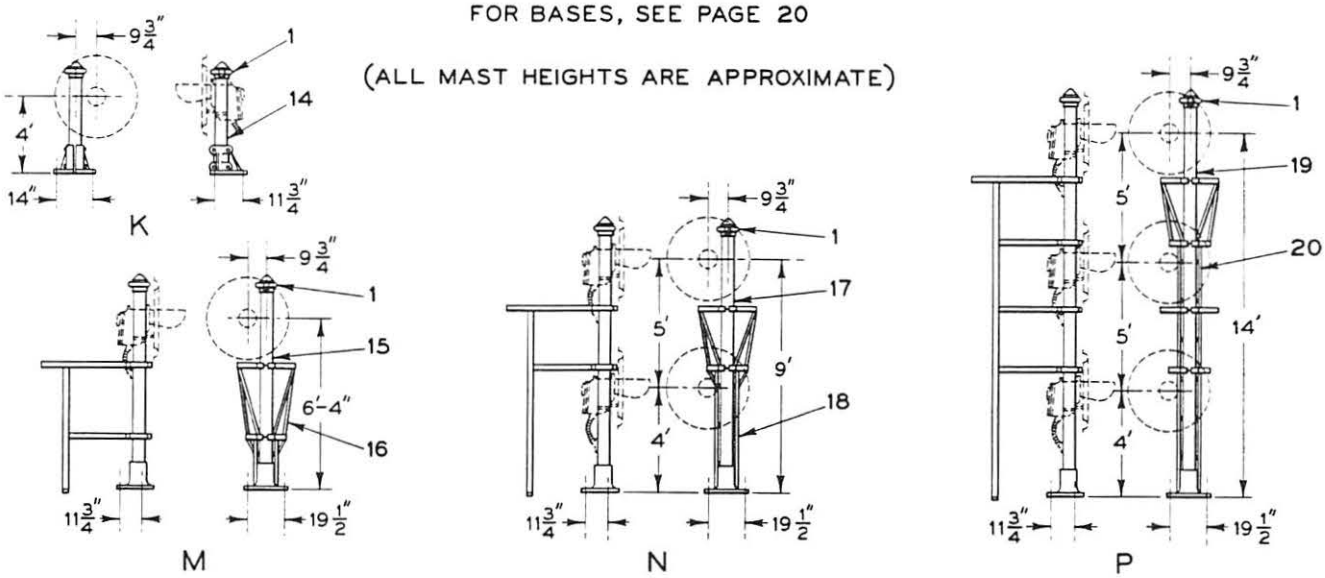


Masts and ladders.



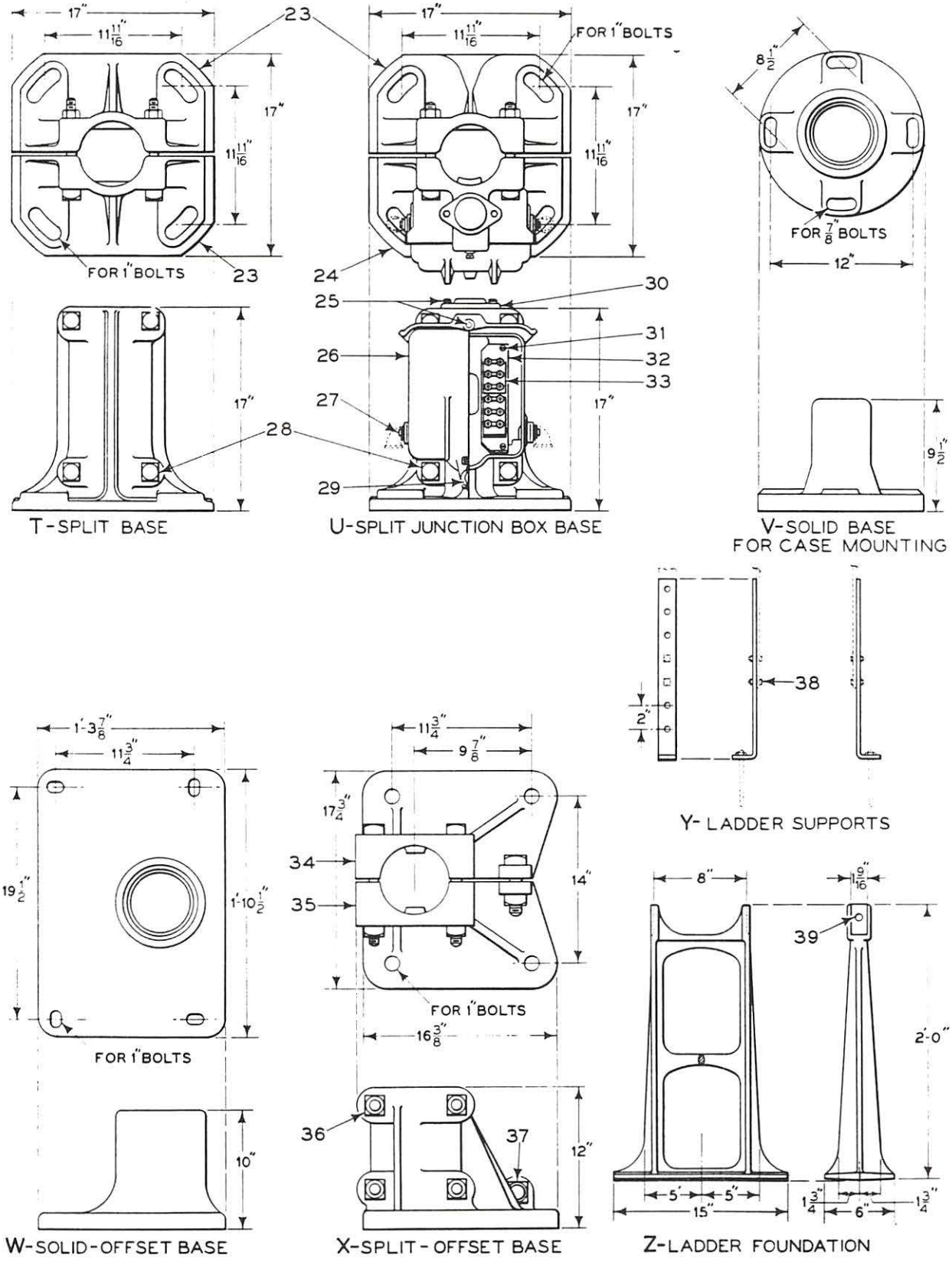
SIGNAL MAST ASSEMBLIES
FOR BASES, SEE PAGE 20

(ALL MAST HEIGHTS ARE APPROXIMATE)



SIGNAL MAST ASSEMBLIES FOR
BRACKET POST OR BRIDGE

Mast and ladders.



Bases and ladder foundations.

Mast Assemblies

Masts listed below and shown on pages 18 and 19 are five-inch inside diameter. They are drilled for the signal arrangements shown and come complete with pinnacle, base, ladder and platform assembly. Bridge signal mast, Ref. K does not have ladder and platform. For foundation bolts, see Catalog Section 3.

To order, specify "Mast Assembly" and give catalog number

REF.	DRILLED FOR		TYPE OF BASE (See Page 20)	CATALOG NUMBER
	SIGNAL HEADS	MARKER LIGHT		
A	one	--	Split	A76-300
A1	"	--	Split Junction Box	A76-301
A2	"	one	Split	A76-302
A3	"	"	Split Junction Box	A76-303
*B	"	--	Solid	A76-304
*B1	"	one	"	A76-305
*C	"	--	"	A76-306
*C1	"	one	"	A76-307
D	two	--	Split	A76-308
D1	"	--	Split Junction Box	A76-309
*E	"	--	Solid	A76-310
*F	"	--	"	A76-311
G	three	--	Split	A76-312
G1	"	--	Split Junction Box	A76-313
*H	"	--	Solid	A76-314
*J	"	--	"	A76-315
K	one	--	Split Offset	A76-319
M	"	--	Solid Offset	A76-316
N	two	--	"	A76-317
P	three	--	"	A76-318

*DOES NOT INCLUDE INSTRUMENT CASE. SEE CATALOG SECTION 5. AND ORDER SEPARATELY.

Poles, Bases, Ladders and Foundations

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
T	**BASE COMPLETE**, split, for 5" mast	P76-340
U	**BASE COMPLETE**, junction box with twenty-four terminal posts, for 5" mast	P76-339
V	**BASE**, solid, for 5" mast, for case mounting	P76-322
W	**BASE**, solid-offset, for 5" mast, for bracket post or bridge mounting	P76-307
X	**BASE**, split-offset, for 5" mast, for bracket post or bridge mounting	P76-468
X1	As above, except for suspended arm	P76-469

Poles, Bases, Ladders and Foundations

Parts List

Order by catalog number and name shown in bold type

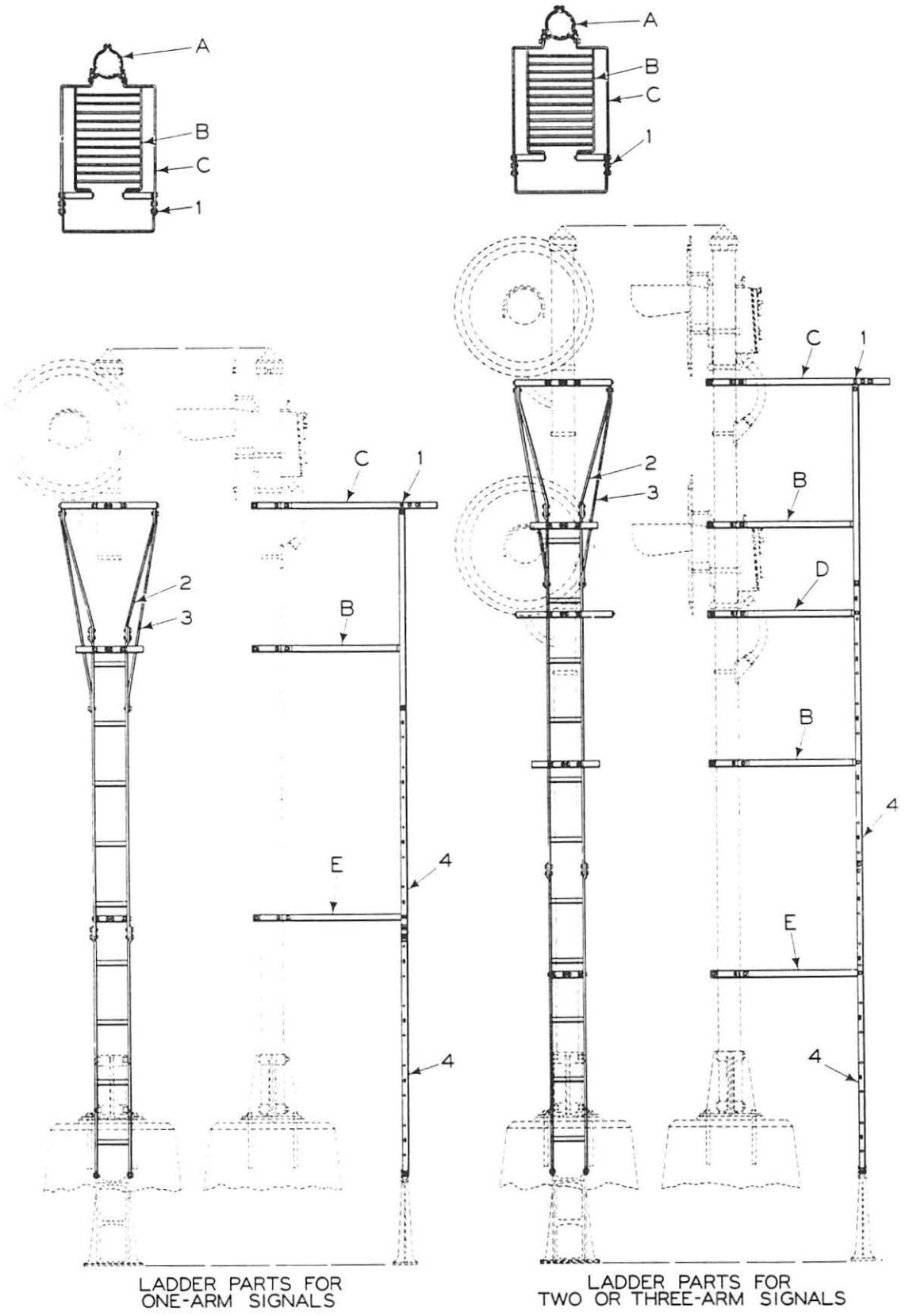
REF.	NAME	CATALOG NUMBER
Y	SUPPORT, ladder, adjustable, for use when ladder is to be fastened directly to flat surface, includes bolts and nuts for attaching to ladder	A76-325
Z	FOUNDATION, for ladder, includes bolts and nuts	A76-327
1	PINNACLE, for 5" dia. mast	P76-254
2	POLE, only, for mast Ref. A	P76-299
2A	As above, except for mast Ref. A1	P76-300
2B	Same as Ref. 2, except for mast Ref. A2	P76-301
2C	Same as Ref. 2, except for mast Ref. A3	P76-302
3	LADDER COMPLETE, for masts Refs. A through C1. For ladder details see page 24	P76-218
4	POLE AND BASE, for mast Ref. B	P76-373
4A	As above, except for mast Ref. B1	P76-494
5	POLE AND BASE, for mast Ref. C	P76-371
5A	As above, except for mast Ref. C1	P76-495
6	POLE, only, for mast Ref. D	P76-303
6A	As above, except for mast Ref. D1	P76-304
7	LADDER COMPLETE, for masts Refs. D and D1. For ladder details see page 24	P76-219
7A	LADDER COMPLETE, for masts Refs. E and F. For ladder details see page 24	P76-220
8	POLE AND BASE, for mast Ref. E	P76-496
9	POLE AND BASE, for mast Ref. F	P76-372
10	POLE, only, for mast Ref. G	P76-305
10A	As above, except for mast Ref. G1	P76-306
11	LADDER COMPLETE, for masts Refs. G and G1. For ladder details see page 24	P76-221
11A	LADDER COMPLETE, for masts Refs. H and J. For ladder details see page 24	P76-224
12	POLE AND BASE, for mast Ref. H	P76-498
13	POLE AND BASE, for mast Ref. J	P76-499
14	POLE, only, for mast Ref. K	P76-500
15	POLE AND BASE, for mast Ref. M	P76-501
16	LADDER COMPLETE, for mast Ref. M	P76-504
17	POLE AND BASE, for mast Ref. N	P76-502
18	LADDER COMPLETE, for mast Ref. N. For ladder details see page 24	P76-222
19	POLE AND BASE, for mast Ref. P	P76-503

Poles, Bases, Ladders and Foundations

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
20	LADDER COMPLETE, for mast Ref. P. For ladder details see page 24	P76-223
23	HALF BASE, for Refs. T and U	P76-343
24	HALF BASE, with junction box	P76-344
25	BOLT, for fastening cap to base	P76-206
25A	WASHER, lock, for above	P81-122
26	COVER, for base Ref. U	P76-361
27	REDUCER, 1-1/2" to 3/4"	P76-250
27A	VENTILATOR	P76-388
27B	PLUG, pipe	P76-207
28	BOLT, for clamping base to mast	P76-368
28A	NUT, for above	P76-245
29	SCREW, thumb, for cover Ref. 26	P76-471
29A	NUT, jam, for above	P76-275
30	CAP, for Ref. U	P76-316
31	SCREW, for mounting plate Ref. 32	P76-362
31A	WASHER, lock, for above	P76-505
32	PLATE, for terminal blocks	P76-470
33	TERMINAL BLOCK COMPLETE, with twelve posts and connectors	A3-127
34	HALF BASE, for Ref. X	P76-341
35	HALF BASE, for Ref. X	P76-342
36	BOLT, with nut, for Ref. X	P76-295
37	BOLT, with nut, for Ref. X	P76-297
38	BOLT, with nut, for Ref. Y	P76-200
39	BOLT, with nut, for Ref. Z	P76-202



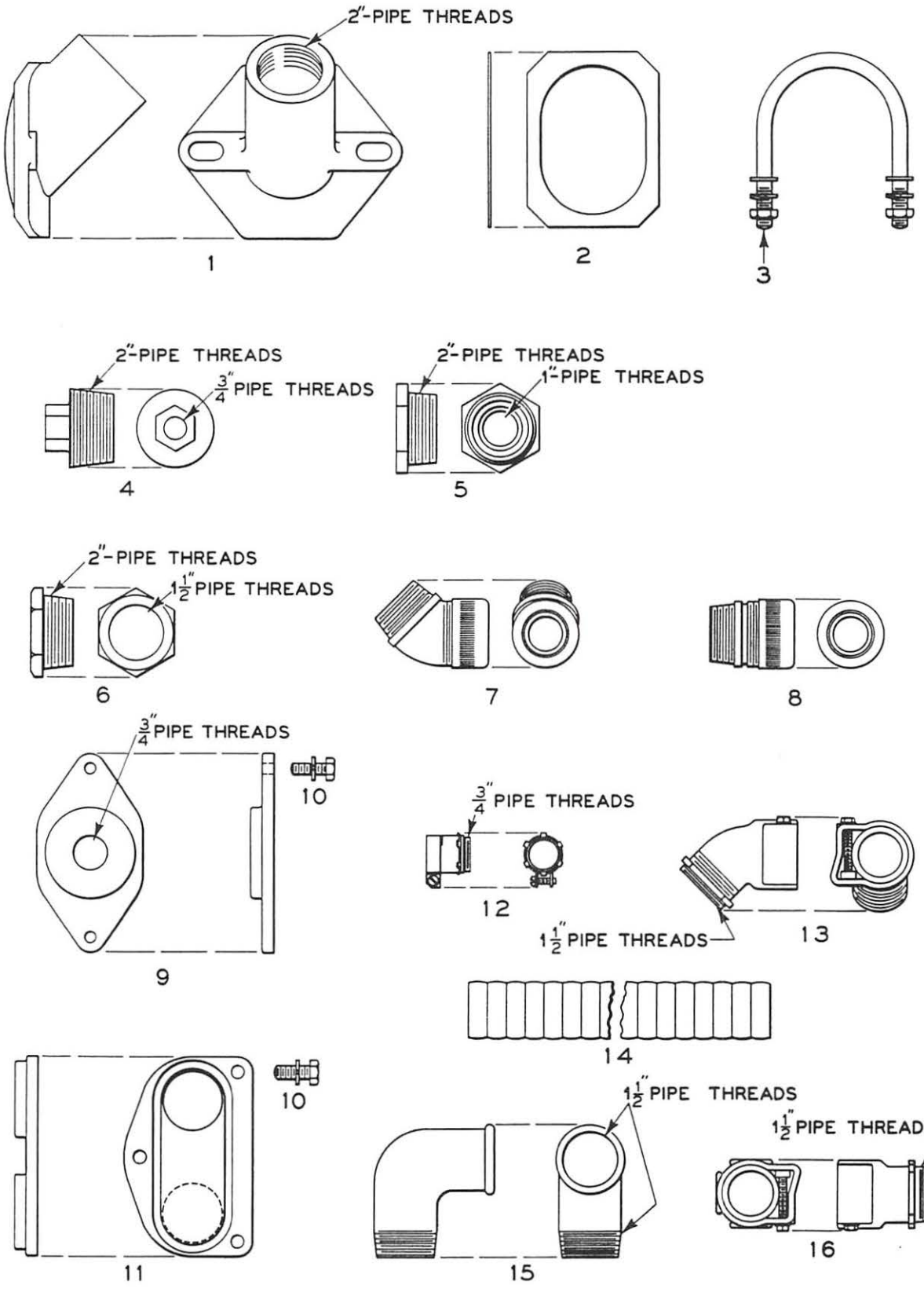
Ladder parts.

Ladder Parts

For Ground, Bracket or Bridge Signals
For 5" and 6" Dia. Masts

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	CLAMP COMPLETE	P76-227
B	PLATFORM COMPLETE.	P76-216
C	HANDRAIL COMPLETE, top, includes clamp	P76-217
D	HANDRAIL COMPLETE, intermediate, includes clamp	P76-225
E	STAY COMPLETE, includes clamp	P76-226
1	BOLT AND NUT, for ladders sections, platforms, stays, etc	P76-200
2	BRACE	P76-229
3	BRACE	P76-228
4	LADDER SECTION, only, 4' - 0 - 1/2" long (3 treads).	P76-210
4A	As above, except 5' - 3 -1/2" long (4 treads)	P76-211
4B	Same as Ref. 4 except 6' - 6- 1/2" long (5 treads)	P76-212
4C	Same as Ref. 4 except 7' - 9 -1/2" long (6 treads)	P76-213
4D	Same as Ref. 4 except 10' - 3 - 1/2" long (8 treads)	P76-214
4E	Same as Ref. 4 except 19' - 0 - 1/2" long (15 treads).	P76-215



Accessories.

Accessories
Parts List

Order by catalog number and name shown in bold type

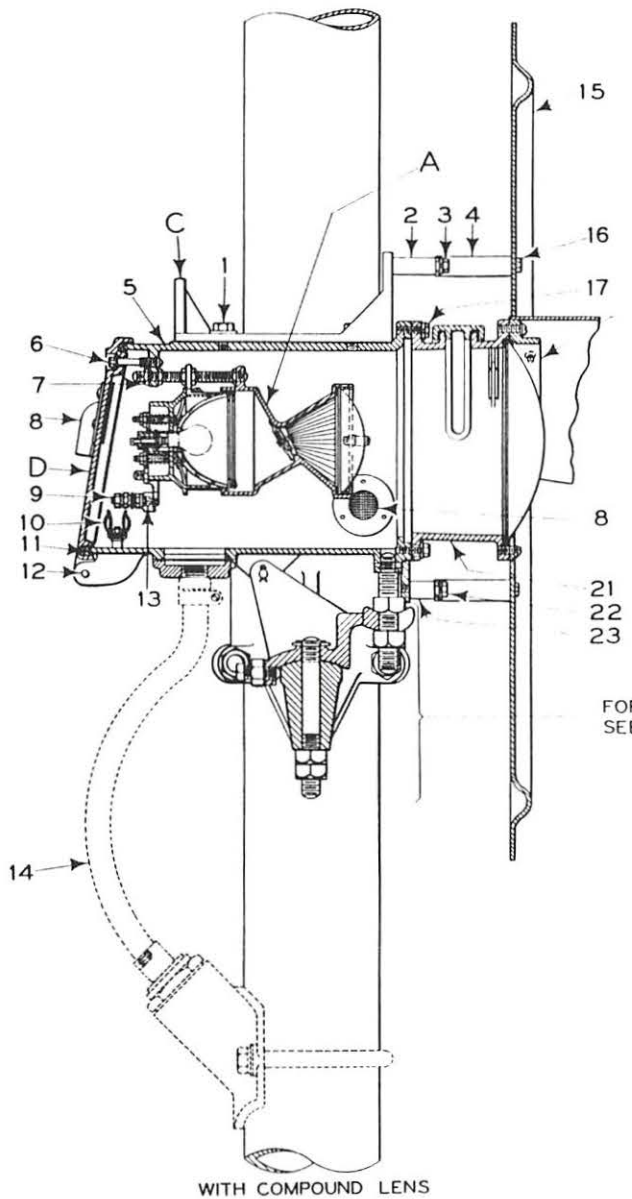
REF.	NAME			CATALOG NUMBER
1	COUPLING, for 5" mast			P76-365
2	GASKET, for coupling Ref. 1			P76-277
3	"U" BOLT COMPLETE, for fastening coupling Ref. 1 to 5" mast			P76-294
4	BUSHING, reducing, 2" to 3/4"			P76-332
4A	As above, except 2" to 1-1/4"			P76-331
4B	Same as Ref. 4, except 1-1/2" to 1"			P76-330
5	REDUCER, 2" to 1"			P76-252
5A	As above except 1 1/2" to 1 1/4".			P76-251
6	REDUCER, 2" to 1-1/2"			P76-253
	CONNECTOR	FOR DIA. CABLE	THREAD SIZE	
7	45 degree	5/8" to 3/4"	1"	P76-355
7A	"	3/4" to 7/8"	1"	P76-353
7B	"	7/8" to 1"	1-1/4"	P76-359
7C	"	1" to 1-3/16"	"	P76-352
7D	"	1-3/16" to 1-3/8"	"	P76-351
7E	"	1-3/8" to 1-5/8"	1-1/2"	P76-350
7F	"	1-5/8" to 1-7/8"	"	P76-357
8	Straight	3/8" to 1/2"	3/4"	P76-360
8A	"	1/2" to 5/8"	"	P76-356
8B	"	5/8" to 3/4"	1"	P76-354
8C	"	3/4" to 7/8"	"	P76-358
8D	"	7/8" to 1"	1-1/4"	P76-460
8E	"	1" to 1-3/16"	"	P76-461
8F	"	1-3/16" to 1-3/8"	1-1/2"	P76-459
8G	"	1-3/8" to 1-5/8"	2"	P76-462
8H	"	1-5/8" to 1-7/8"	2"	P76-463
9	COUPLING, for marker light			P76-477
10	SCREW, for fastening coupling to case			P50-722
10A	WASHER, lock, for above			P76-106
11	COUPLING, for Types SA and SA-1 signals, has one, 1" pipe tapped hole			P76-478
11A	As above, except has one 1-1/4" pipe tapped hole.			P76-479
11B	Same as Ref. 11, except has one 1-1/2" pipe tapped hole.			P76-480
11C	Same as Ref. 11, except has one 2" pipe tapped hole			P76-482
11D	Same as Ref. 11, except has two 1-1/2" pipe tapped holes, for two-unit dwarf signals only			P76-481

Accessories
Parts List

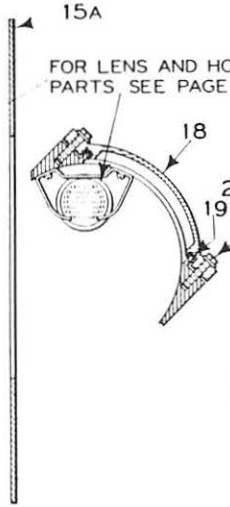
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
12	CONNECTOR, for 3/4" flexible conduit	P76-349
13	COUPLING, 45 degree, for 1-1/2" flexible conduit	P76-364
14	CONDUIT, 1-1/2" flexible. Specify number feet	A85-868
14A	As above, except 3/4" flexible conduit. Specify number feet.	A76-587
15	ELBOW, 90 degrees	P76-208
16	COUPLING, straight, for 1-1/2" flexible conduit	A85-866

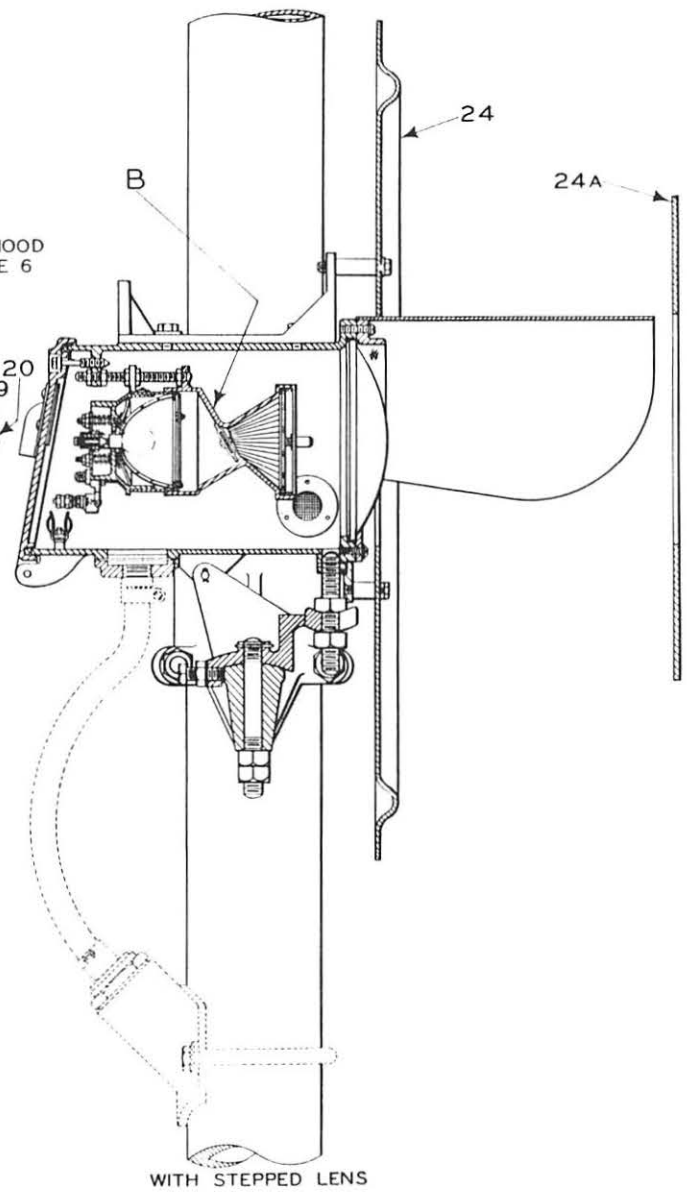
Memoranda



WITH COMPOUND LENS



FOR MOUNTING PARTS
SEE PAGE 2



WITH STEPPED LENS

Marker lights.

Marker Lights
Parts List

Order by catalog number and name shown in bold type

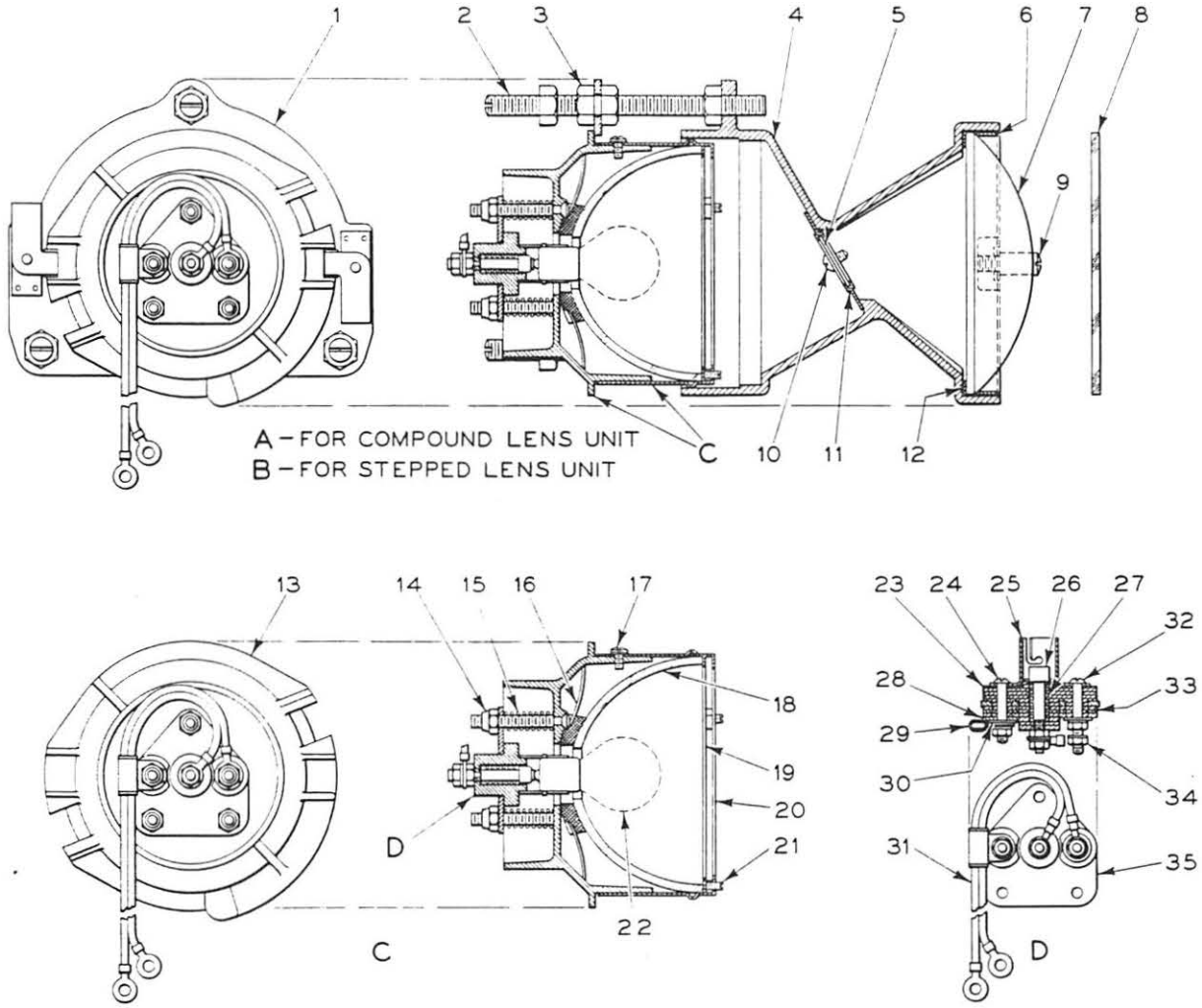
REF.	NAME	CATALOG NUMBER
A	REFLECTOR AND LENS UNIT COMPLETE, for marker unit with compound lens, for details see page 34	
B	REFLECTOR AND LENS UNIT COMPLETE, for marker unit with stepped lens, for details see page 34	
C	SIGHTING DEVICE COMPLETE, for references see page 2	
D	DOOR COMPLETE, with ventilator and gasket.	P76-507
1	SCREW, for fastening sighting device to case	P76-204
1A	WASHER, lead, for above	P50-743
2	SPACER, upper, for background	P76-314
3	SCREW, for fastening bracket to sighting device	P81-120
3A	WASHER, lock, for above	P81-190
4	BRACKET, for mounting background to case	P76-328
5	CASE, only	P76-486
6	SCREW, for fastening door	P76-427
7	NUT, for fastening reflector and lens unit to case	P81-203
8	VENTILATOR, for door and case	P50-205
8A	SCREEN, for above	P50-207
8B	PLATE, for above	P50-206
8C	SCREW, for above	P50-249
9	TERMINAL BLOCK COMPLETE	P76-366
10	RESISTANCE UNIT COMPLETE, 2.5 amps., 1 ohm	A76-330
10A	As above, except 1.75 amps., 2 ohms	A76-331
10B	Same as Ref. 10, except 1.0 amp., 5 ohms.	A76-332
11	GASKET, 29" long,for door. Specify number feet	P76-132
12	PIN, roll,for door	P76-291
13	SCREW, for mounting terminal block	P62-213
13A	WASHER, lock, for above	P85-390
14	CONDUIT ENTRANCE, for references see page 26.	
15	BACKGROUND, 35" dia. for compound lens signals	P76-376
15A	As above, except 20" dia	P76-377
16	BOLT, for fastening background to bracket.	P76-367
16A	WASHER, lock, for above	P81-190
17	SCREW, for fastening adapter to case.	P50-722
17A	WASHER, lock, for above	P76-106
18	COVER, for hand hole	P76-379
19	GASKET, 17" long for cover. Specify number feet.	P76-132

Marker Lights
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
20	SCREW, for fastening cover to adapter	P65-272
20A	WASHER, lock, for above	P81-121
21	ADAPTER, only	P76-444
22	SCREW, for fastening background bracket to case	P76-205
22A	WASHER, lock, for above	P81-190
23	SPACER, lower, for background	P76-315
24	BACKGROUND, 35" dia., for stepped lens signals	P76-374
24A	As above, except 20" dia.	P76-375

Memoranda



Reflectors and Receptacles

For Marker Lights

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	REFLECTOR AND LENS UNIT COMPLETE, red, for marker unit with compound lens	P76-475
B	REFLECTOR AND LENS UNIT COMPLETE, red, for marker unit with stepped lens	P76-476
C	REFLECTOR HOLDER COMPLETE	P76-472
D	RECEPTACLE COMPLETE	P76-394
1	PLATE, for mounting unit	P76-474
2	STUD, for fastening reflector and lens unit to case	P76-378
3	NUT, for stud	P81-203
4	FRAME, for holding reflector unit	P76-487
5	DISC, color, red, assembled in retaining cup	P76-405

Reflectors and Receptacles

For Marker Lights

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
6	RING, for retaining lens	P76-484
7	LENS, clear, for compound lens unit	P76-447
8	GLASS, flat, for stepped lens units	P76-241
9	SCREW, for lens ring	P76-317
9A	CLIP, for above	P76-293
9B	WASHER, lock, for above	P81-206
10	SCREW, for bezel ring.	P85-233
10A	WASHER, lock, for above	P62-402
11	RING, bezel, for holding color disc in place	P76-485
12	GASKET, for lens or glass	P76-278
13	HOLDER, for reflector	P76-483
14	NUT, elastic stop	P76-333
15	SPRING, for stud	P76-237
16	WASHER, spring, for reflector	P76-239
17	SCREW, for fastening bezel ring to holder	P76-443
17A	WASHER, lock, for above	P65-728
18	REFLECTOR, with washer	P76-154
19	WASHER, for use between reflector and bezel	P76-249
20	RING, bezel, for reflector	P76-473
21	SCREW, for bezel ring	P76-269
22	LAMP, incandescent (S-11), see Section 46 for ordering information .	
23	BLOCK, only	P76-410
24	SCREW, short	P76-257
25	RECEPTACLE, only	P76-319
26	PLUNGER, for receptacle	P76-418
27	SPRING, for plunger	P76-240
28	WASHER, insulating	P76-236
29	CLIP, for wires	P76-422
30	WASHER, metal	P76-247
31	LEAD COMPLETE	P76-266
32	SCREW, long	P76-259
33	WASHER, insulating	P76-235
34	NUT, for terminal posts	P62-186
34A	WASHER, lock, for above	P76-318
35	PLATE, for receptacle	P76-415

Memoranda

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SEARCHLIGHT SIGNALS

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P76-100	350-3		SCREW	13
P76-101	646-3		NUT	4
P76-102	730-21		PIN	4
P76-103	924-11		GLASS	15
P76-104	980-10		STUD	4
P76-105	0272-9		NUT	4
P76-106	01273-7		WASHER	7, 8, 27, 31
P76-108	1225-2		WASHER	13
P76-115	13014-311		GASKET	12, 16
P76-116	17188-5		PIN	4
P76-117	17188-66		PIN	
P76-127	33287-15		SCREW	7
P76-128	37380-36		CASE	12, 16
P76-129	01272-7		NUT	13, 16
P76-131	42843-1		NUT	13
P76-132	43460-13		GASKET FT.	7, 31
P76-133	43460-17		GASKET FT.	55, 73
P76-135	49127-64		HOOD	7
P76-141	51107-3		SPRING	12, 15
P76-142	51107-6		SPRING	12, 16
P76-143	52983-1		GASKET	12, 15
P76-146	53122-2		REFLECTOR	55, 73
P76-149	54249-6		LENS	7
P76-150	54249-3		LENS	12, 16
P76-154	55343 GR1		REFLECTOR	11, 15, 35
P76-200	09-2		BOLT & NUT	23, 25
P76-201	01250-21		WASHER	17, 71
P76-202	077-1		BOLT & NUT	23
P76-203	0395-14		SCREW	4
P76-204	0395-12		SCREW	31
P76-205	0798-1		SCREW	32
P76-206	0597-1		BOLT	23
P76-207	0755		PLUG	23
P76-208	0776-1		ELBOW	28
P76-209	0838-19		CLIP	11, 15
P76-210	312-125GR1		LADDER	25
P76-211	312-125GR2		LADDER	25
P76-212	312-125GR3		LADDER	25
P76-213	312-125GR4		LADDER	25
P76-214	312-125GR5		LADDER	25
P76-215	312-125GR6		LADDER	25
P76-216	313-97GR1		PLATFORM	25
P76-217			HANDRAIL COMPLETE	25
	314-142	2	HANDRAIL	
	314-143		HANDRAIL	
	317-41GR1		CLAMP	
	09-2	6	BOLT & NUT	
P76-218			HANDRAIL COMPLETE	22
	314-142	2	HANDRAILS	
	314-143		HANDRAIL	
	319-219	2	BRACES	
	319-220	2	BRACES	
	313-97GR1		PLATFORM	
	312-125GR2		LADDER	
	312-125GR3		LADDER	
	317-41GR1	3	CLAMPS	
	315-120	2	STAYS	
	09-2	28	BOLTS & NUTS	
P76-219			LADDER COMPLETE	22
	314-142	2	HANDRAILS	
	314-143		HANDRAIL	
	314-144	2	HANDRAILS	
	319-219	2	BRACES	
	319-220	2	BRACES	
	313-97GR1	2	PLATFORMS	
	312-125GR4		LADDER	
	312-125GR3		LADDER	
	317-41GR1	5	CLAMPS	
	315-120	2	STAYS	
	09-2	36	BOLTS & NUTS	

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SEARCHLIGHT SIGNALS

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P76-220			HANDRAIL COMPLETE	22
	314-142	2	HANDRAILS	
	314-143		HANDRAIL	
	314-144	2	HANDRAILS	
	319-219	2	BRACES	
	319-220	2	BRACES	
	313-97GR1	2	PLATFORMS	
	312-125GR4		LADDER	
	312-125GR3		LADDER	
	317-41GR1	4	CLAMPS	
	09-2	32	BOLTS & NUTS	
P76-221			HANDRAIL COMPLETE	22
	314-142	2	HANDRAILS	
	314-143		HANDRAIL	
	314-144	4	HANDRAILS	
	319-219	2	BRACES	
	319-220	2	BRACES	
	313-97GR1	3	PLATFORMS	
	312-125GR6		LADDER	
	317-41GR1	7	CLAMPS	
	315-120	2	STAYS	
	09-2	40	BOLTS & NUTS	
P76-222			HANDRAIL COMPLETE	22
	314-142	2	HANDRAILS	
	314-143		HANDRAIL	
	319-219	2	BRACES	
	319-220	2	BRACES	
	313-97GR1		PLATFORM	
	312-125GR1		LADDER	
	317-41GR1	2	CLAMPS	
	51836-12	2	SUPPORTS	
	09-2	24	BOLTS & NUTS	
P76-223			HANDRAIL COMPLETE	23
	314-142	2	HANDRAILS	
	314-143		HANDRAIL	
	319-219	2	BRACES	
	319-220	2	BRACES	
	313-97GR1	2	PLATFORMS	
	314-144	2	HANDRAILS	
	312-125GR1		LADDER	
	312-125GR2		LADDER	
	317-41GR1	4	CLAMPS	
	51836-12	2	SUPPORTS	
	09-2	36	BOLTS & NUTS	
P76-224			HANDRAIL COMPLETE	22
	314-142	2	HANDRAILS	
	314-143		HANDRAIL	
	314-144	4	HANDRAILS	
	319-219	2	BRACES	
	319-220	2	BRACES	
	313-97GR1	3	PLATFORMS	
	312-125GR6		LADDER	
	317-41GR1	6	CLAMPS	
	09-2	36	BOLTS & NUTS	
P76-225			HANDRAIL COMPLETE	25
	314-144	2	HANDRAILS	
	317-41GR1		CLAMP	
	09-2	4	BOLTS & NUTS	
P76-226			HANDRAIL COMPLETE	25
	315-120	2	STAYS	
	317-41GR1		CLAMP	
	09-2	4	BOLTS & NUTS	
P76-227	317-41GR1		CLAMP	25
P76-228	319-219		BRACE	25
P76-229	319-220		BRACE FOR HANDRAIL	25
P76-230	361		SCREW	13
P76-231	390-14		SCREW	8
P76-232	441-122		STUD	3
P76-233	441-165		STUD	12, 16

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CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P76-234	441-740		STUD	13, 16
P76-235	493-18		WASHER	35
P76-236	493-142		WASHER	35
P76-237	586-140		SPRING	11, 15, 35
P76-238	586-203		SPRING	3
P76-239	590-75		WASHER	35
P76-240	786-64		SPRING	35
P76-242	980-105		STUD	4
P76-243	980-42		STUD	4
P76-244	980-68		STUD	4
P76-245	1047-14		NUT	23
P76-247	01250-9		WASHER	13, 35
P76-248	1225-109		WASHER	12, 16
P76-250	1439		REDUCER	23
P76-251	1439-5		REDUCER	27
P76-252	1439-22		REDUCER	27
P76-253	1439-50		REDUCER	
P76-254			PINNACLE	22
	1661-4		PINNACLE	
	0551-1		BOLT	
	41739-2		NUT	
P76-255	2254-4		RING	7
P76-256	2472-50		SCREW	3
P76-257	3608-32		SCREW	35
P76-259	03608-40		SCREW	35
P76-261	2644-5		PIN	12, 17
P76-262	3955-8		SCREW	7
P76-263	4256-2		WASHER	12
P76-264	4679		ROUNDEL	8
P76-265	4906-40		CONNECTOR	13
P76-266	5075-74GR2		LEAD	35
P76-267	5100-6		SCREW	12, 16
P76-268	5100-10		SCREW	12, 16
P76-269	5100-37		SCREW	35
P76-270	6006-1		SCREW	4
P76-271	6358		NUT	4
P76-272	7889-10		PIN	13, 17
P76-273	9524-3		HASP	3
P76-274	9525-7		NUT	3
P76-275	6358-17		NUT	23
P76-277	13014-158		GASKET	27
P76-279	13014-332		GASKET	4
P76-280	13014-333		GASKET	4
P76-281	13063-20		SPRING	12, 16
P76-282	13063-21		SPRING	12, 16
P76-283	13061-52GR2		CONTACT	13
P76-284	13973-1		ROUNDEL	8
P76-285	14070-1		NUT	4
P76-287	15284-17		SLEEVE	12, 15, 16
P76-288	16111-142		CONTACT	13, 16
P76-289			U-BOLT COMP	4
	16194-17		U-BOLT	
	42333-63	2	NUT	
P76-290	16398-4		SCREW	7
P76-291	17188-37		PIN	31
P76-292	18547-51		CLIP	13, 16
P76-293	18547-61		CLIP	35
P76-294			U BOLT COMP	27
	20476-40		U BOLT	
	01250-21	2	WASHER	
	01273-10	2	WASHER	
	1048-6	2	NUT	
P76-296	29560		BRACKET	4
P76-298	31066-132GR1		COIL	12
P76-299	31491-151		POLE	22
P76-300	31491-152		POLE	22
P76-303	31491-155		POLE	22
P76-304	31491-156		POLE	22
P76-305	31491-157		POLE	22
P76-306	31491-158		POLE	22
P76-308	32886-17		BUSHING	12, 16
P76-309	33287-6		SCREW	8
P76-310	33287-13		SCREW	8
P76-311	33287-23		SCREW	8
P76-312	33287-26		SCREW	8
P76-313	33529-2GR1		COVER	7
P76-314	33645-9		SPACER	31
P76-315	33645-10		SPACER	32

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CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P76-316	33675-16		CAP	23
P76-317	34456-3		SCREW	
P76-318	34494-2		WASHER	35
P76-319	34864-13		RECEPTACLE	35
P76-320	35699-2		SCREW	11
P76-321	35788-5		SCREW	8
P76-322	36015		BASE	21
P76-323	36733-3		LENS	8
P76-324	36733-10		LENS	8
P76-326	39066		SCREW	4
P76-327	40539-57		BRACEKT	4
P76-328	40539-91		BRACKET	31
P76-329	41786-2		PLATE	13
P76-330	41892		BUSHING	27
P76-331	41892-1		BUSHING	27
P76-332	41892-14		BUSHING	27
P76-333	42333-47		NUT	11, 15, 35
P76-334	42799-7GR8		CONTACT	13
P76-335	42847-10		POST	13, 17
P76-340	43951-17GR1		BASE	21
P76-343	43953-39		BASE	23
P76-344	43953-45		BASE	23
P76-345	43983-34		RING	8
P76-346	43983-46		RING	8
P76-347	43983-81		RING	7
P76-348	43983-101		RING	7
P76-349	44515-2		CONNECTOR	28
P76-350	44515-19		CONNECTOR	27
P76-351	44515-34		CONNECTOR	27
P76-352	44515-41		CONNECTOR	27
P76-353	44515-46		CONNECTOR	27
P76-354	44515-45		CONNECTOR	27
P76-355	44515-49		CONNECTOR	27
P76-356	44515-54		CONNECTOR	27
P76-357	44515-56		CONNECTOR	27
P76-358	44515-60		CONNECTOR	27
P76-359	44515-63		CONNECTOR	27
P76-360	44515-72		CONNECTOR	27
P76-361	52318-41GR1		COVER COMP	23
P76-362	45609-7		SCREW	23
P76-363	45647-5		RETAINER	11, 15
P76-364			COUPLING COMPLETE	
	56353-33		CONNECTOR	
	35132-32		ELBOW	
P76-365	45689-191		COUPLING	
P76-366	46048-11GR2		TERM BLOCK	31
P76-367	46069-4		BOLT	31
P76-368	46461-88		BOLT	23
P76-372	48848-51GR6		POLE & BASE	22
P76-373	48848-51GR1		POLE & BASE	22
P76-374	49162-25		BACKGROUND	3, 31
P76-375	49162-80		BACKGROUND	3, 31
P76-376	49162-82		BACKGROUND	
P76-378	49476-78		STUD	34
P76-379	49584-9		COVER	31
P76-380	49915-1		VENTILATOR	
P76-381	51120-2GR1		SIGHT	3
P76-382	51121-2		FRAME	3
P76-383	51559-11		TERMINAL	13
P76-384	51364-1		PLUG	3
P76-385	51559-86		TERMINAL	13, 16
P76-386	51559-87		TERMINAL	13, 16
P76-387	52681-15		SCREW	7
P76-388	52981-4GR1		VENTILATOR	23
P76-389	52983-3		GASKET	12, 16
P76-390	53053 GR8		BLOCK	11
P76-393	53057-7GR2		DOOR	3
P76-394	53058-18GR2		RECEPTACLE	34
P76-395	53058-35GR1		RECEPTALCE	11
P76-396	53058-35GR2		RECEPTACLE	11, 15
P76-397	53059-3GR1		FINGER	13
P76-398	53060 GR4		TERM BLOCK	11
P76-399	53063-10		BRACKET	11, 15
P76-400	53063-11		BRACKET	11, 15
P76-401	53064-7		BRACKET	11, 15
P76-402	53065-3		SHELL	12

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P76-404	53070-5	BASE	4
P76-405	53073 GR2	DISC	15, 34
P76-406	53073 GR3	DISC	11, 15
P76-407	53073 GR12	DISC	11, 15
P76-408	53073-9GR1	DISC	11
P76-409	53080	TUBE	12
P76-410	53091-2	BLOCK	35
P76-411	53092-2	BRACKET	4
P76-412	53093-12	BRACKET	4
P76-413	53093-14	BRACKET	4
P76-414	53096 GR2	CONNECTOR	13
P76-415	53104	PLATE	35
P76-416	53105	SPRING	3
P76-417	53106-2	LATCH	3
P76-418	53107-7	PLUNGER	35
P76-419	53111-1	PLATE	3
P76-420	53112	SPACER	3
P76-421	53112-3	SPACER	3
P76-423	53120-1	TERMINAL	13, 35
P76-424	53120-4	TERMINAL	13, 35
P76-425	53121-2GR17	COIL	11
P76-426	53121-2GR10	COIL	11
P76-427	53141-9	SCREW	31
P76-428	53270-3GR1	CASE	11
P76-429	53270-3GR3	CASE	11
P76-430	53271-6	CAM	12, 15
P76-431	53271-7	CAM	12, 15
P76-432	53272-1GR1	STIRRUP	12, 16
P76-433	53349-13	SCREW	12
P76-435	53821-11GR1	CASE	3
P76-436	53821-11GR3	CASE	3
P76-437	53821-11GR4	CASE	3
P76-438	53829-2	SCREW	13, 16
P76-439	53879	SHIM	12, 16
P76-440	53879-1	SHIM	12, 16
P76-444	54243-6	ADAPTER	32
P76-445	54243-10	ADAPTER	7
P76-446	54248-2	HOLDER	7
P76-447	54249-4	LENS	12
P76-448	54264-4	ROUNDEL	7
P76-449	54264-6	ROUNDEL	7
P76-450	54264-10	ROUNDEL	7
P76-451	54392-9	SCREW	12, 16
P76-452	54837-6	CHASE	4
P76-453	55478-26GR1	BRACKET	4
P76-454	55833-21	PLUGBOARD	13, 16
P76-455	55833-24	PLUGBOARD	13, 16
P76-456	56182-1	CONTACT	13, 16
P76-457	56421 GR6	SLIDE	3
P76-458	56421 GR7	SLIDE	3
P76-459	56353	CONNECTOR	27
P76-460	56353-6	CONNECTOR	27
P76-461	56353-8	CONNECTOR	27
P76-462	56353-9	CONNECTOR	27
P76-463	56353-10	CONNECTOR	27
P76-464	56629-6GR1	PHANKILL	8
P76-465	56629-7	PHANKILL	7
P76-466	56955-6GR1	RING	7
P76-467	56956-3	RING	7
P76-470	58679	PLATE	23
P76-471	58681-1	SCREW	23
P76-472	59129 GR2	HOLDER	34
P76-473	59130 GR1	RING	35
P76-474	59131 GR1	PLATE	34
P76-475	59189 GR1	REFL & LENS	34
P76-476	59189-1GR1	REFL & LENS	34
P76-477	59202-4	COUPLING	27
P76-478	59202-16	COUPLING	27
P76-479	59202-17	COUPLING	27
P76-480	59202-18	COUPLING	27
P76-481	59202-19	COUPLING	27
P76-482	59202-21	COUPLING	27
P76-483	59207	HOLDER	35
P76-484	59229	RING	35
P76-485	59243	RING	35
P76-486	59245-2	CASE	31

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SEARCHLIGHT SIGNALS

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P76-487	59247		FRAME	34
P76-488	59572 GR1		BEARING	13, 16
P76-490	55839-3GR1		PLUG COUP	11
P76-491	53073-11GR1		DISC	12
P76-505	53029		WASHER	23
P76-507	59140 GR1		DOOR	31
P76-508	4906-160		CONNECTOR	16
P76-509	1407-13		TERMINAL	16
P76-510	1581-47		SPRING	17
P76-511	19145		HOOD	15
P76-513	19158		WASHER	15
P76-514	28979-36		TERMINAL	17
P76-515	29151-21		SCREW	16
P76-516	35470-69		STOP	17
P76-517	37367-7		LINK	17
P76-519	42760-221GR1		CONNECTOR	17
P76-520	51195-20GR1		FINGER	17
P76-521	51195-21GR1		FINGER	17
P76-522	53270-3GR6		CASE	15
P76-523	53703-7GR1		COUNTERWEIGHT	15
P76-524	55839-3GR3		PLUG COUPLER	15
P76-525	56015-64GR1		COIL	15
P76-526	56130-3GR1		CONTACT GR	15
P76-530	53056-3GR1		HOLDER FOR STEPPED LENS SIG.	11
P76-535	53056-3GR2		HOLDER F/STEPPED LENS	11, 15
P76-540	54732 GR2		SOCKET	4

CATALOG SECTION P81
PARTS LIST
Switch Circuit Controllers
Models 7J, 7K and 8

FOR ASSEMBLIES, SEE CATALOG SEC. 81

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GENERAL RAILWAY SIGNAL
A UNIT OF GENERAL SIGNAL
BOX 600 ROCHESTER NEW YORK 14602

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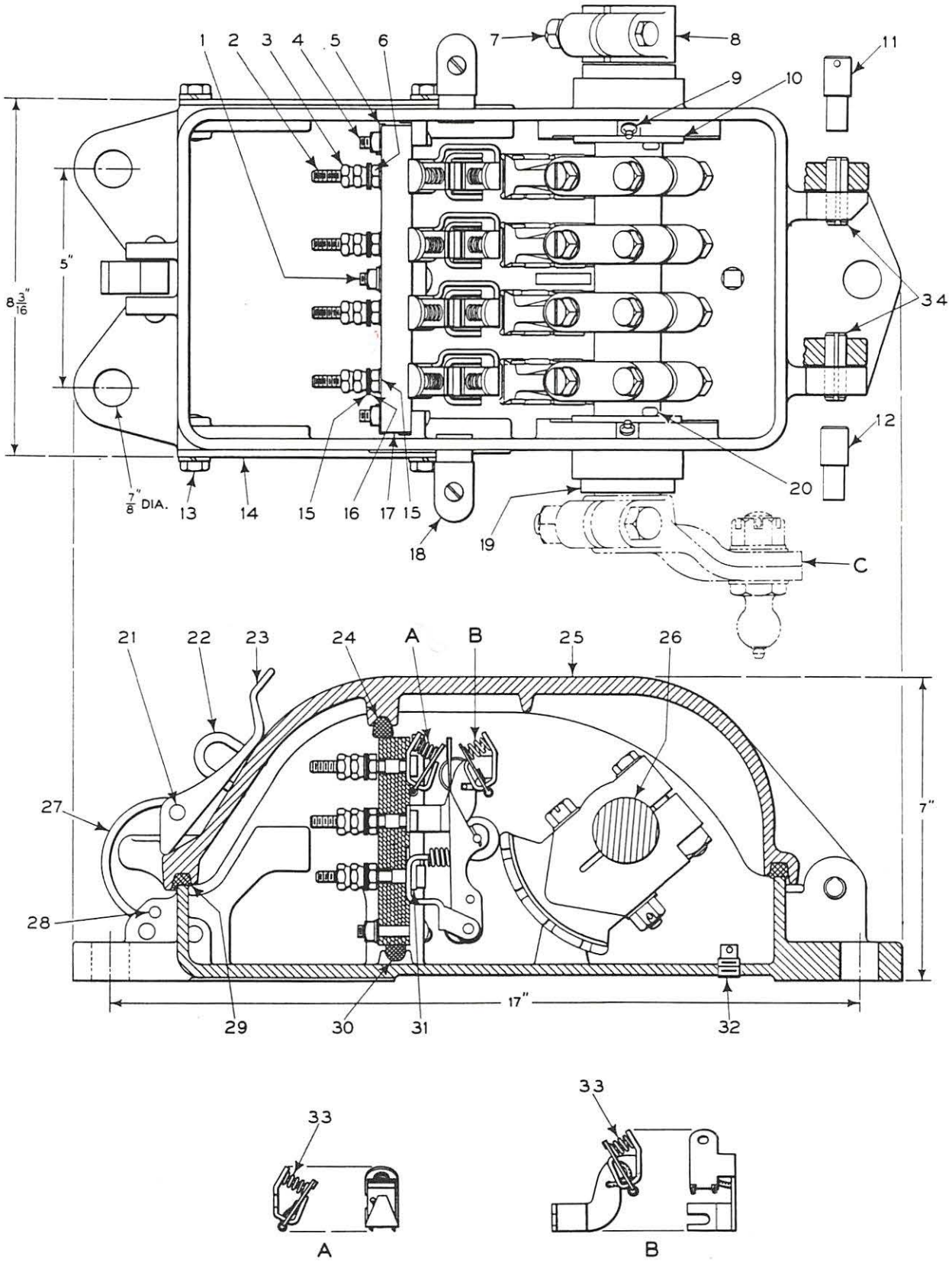


Common parts for models 7J, 7K and 8.

Switch Circuit Controllers

Common Parts List for Models 7J, 7K and 8

For parts not listed here, see lists under specific models, pages 6-11. For accessories, see pages 12-14.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	CONTACT ARM, front	P81-158
B	CONTACT ARM, back	P81-157
C	CRANK, for details, see page 12	
1	BOLT, with sq. nut, for mounting terminal board in center	P81-125
1A	WASHER, lock, for above	P81-121
1B	WASHER, for above	P76-108
2	SCREW, used as terminal post	P81-105
3	NUT, for terminal posts	P76-131
4	BOLT, with sq. nut, for mounting terminal board at bottom	P81-126
5	WASHER, lock, for above	P81-130
6	NUT, for terminal posts	P62-333
7	SCREW, for shield	P81-120
7A	NUT, for above	P81-127
7B	WASHER, lock, for above	P81-190
8	SHIELD, for end of shaft	P81-189
9	FITTING, for shaft and crank	P81-140
10	WASHER, for each end of shaft	P81-109
11	STUD, 1 11/16" long, for cover	P81-107
12	STUD, 1 7/16" long, for cover	P81-106
13	SCREW, for fastening outlets to case	P81-133
13A	WASHER, lock, for above	P81-190
14	CAP, for opening in case	P81-164
15	WASHER, for terminal posts	P76-108
16	WASHER, lock, for terminal posts	P81-206
17	TERMINAL BOARD	P81-151
18	VENTILATOR, for case	P81-204

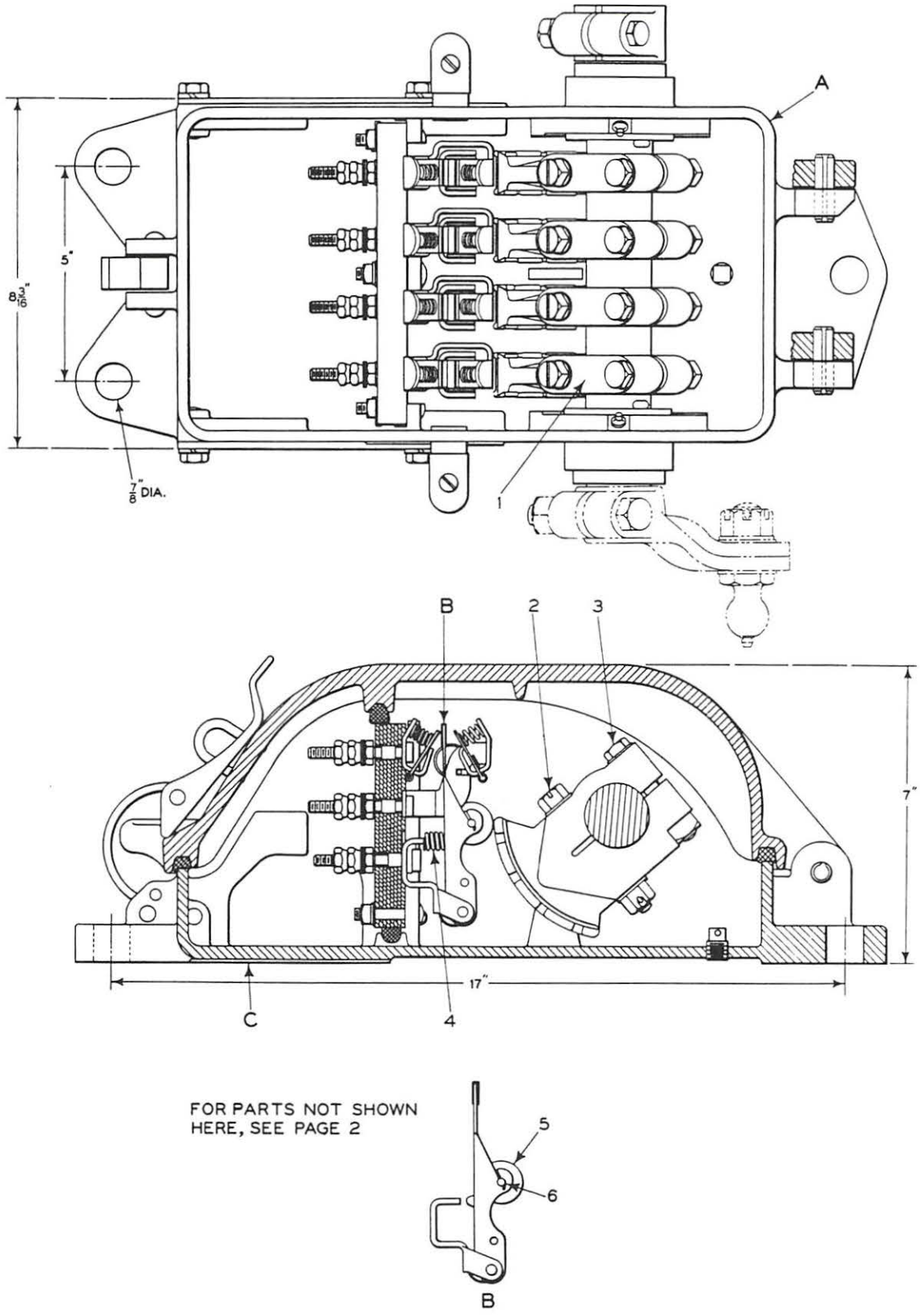
Switch Circuit Controllers

Common Parts List for Models 7J, 7K and 8

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
19	BUSHING, for each end of cam shaft	P81-181
20	COTTER, for shaft	P81-102
21	RIVET, 1/2" long, for strap	P81-116
22	STAPLE, for cover	P81-141
23	HASP, for cover	P81-165
24	GASKET, 7" long, for top of terminal board. Specify number feet	P81-196
25	COVER COMPLETE, includes gaskets and staple, for use with studs Refs 11 and 12.	P81-180
25A	COVER COMPLETE, includes gaskets and staple, for use with roll pins Ref. 34	P81-216
26	SHAFT, 1 1/2" dia., for cams	P81-183
27	STRAP, for cover	P81-160
28	RIVET, 1 7/8" long, for strap	P81-119
29	GASKET, 4' -2" long, for cover. Specify number feet	P81-148
30	GASKET, 7" long, for use under terminal board. Specify number feet	P81-215
31	WASHER, lock, for terminal posts	P81-129
32	PIPE PLUG, for case	P81-124
33	SPRING, for front and back contact arms	P81-114
34	ROLL PIN, for cover	P81-217

Memoranda



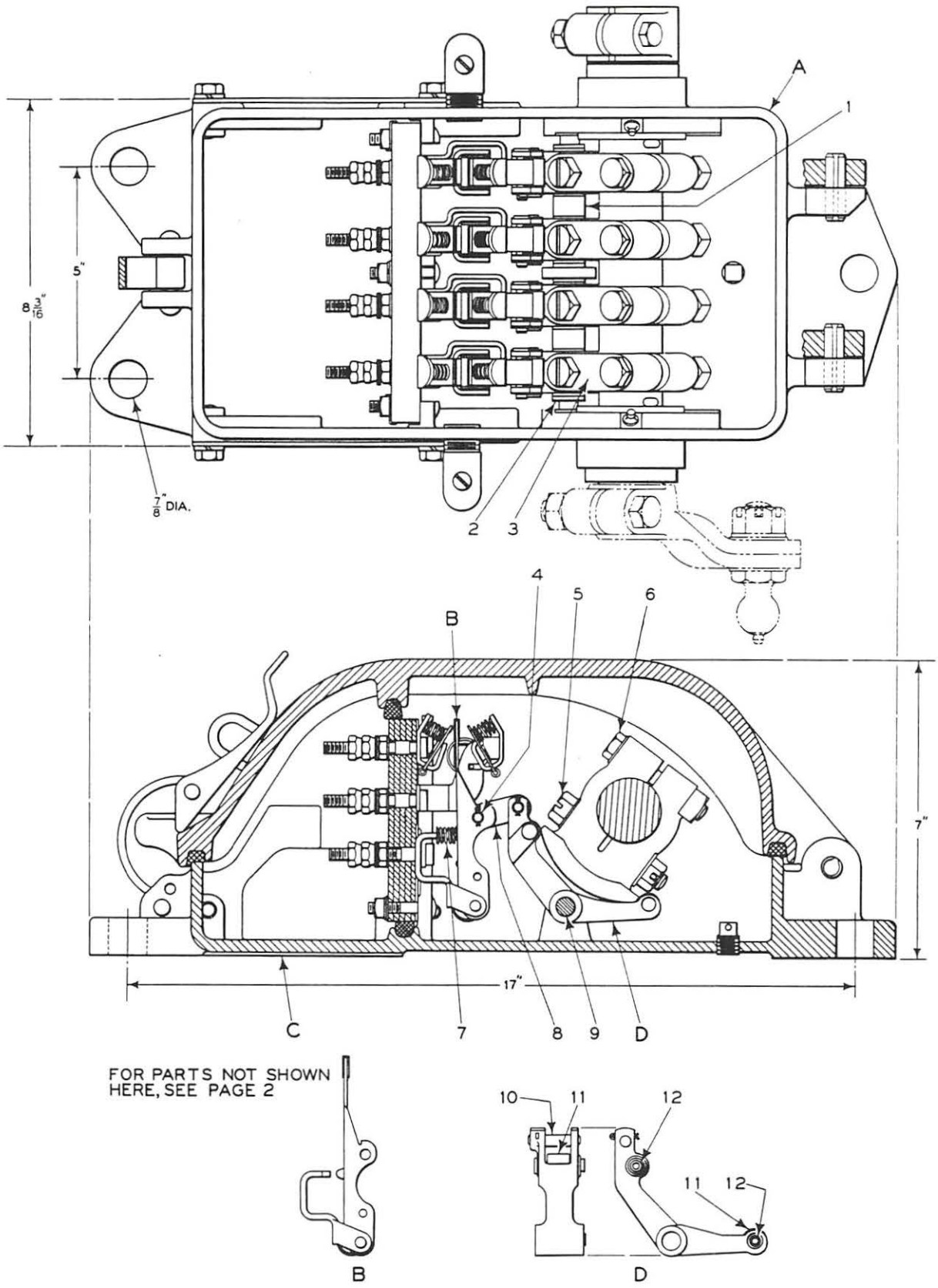
Switch circuit controllers
model 7J, catalog no. A81-100.

Switch Circuit Controllers
Model 7J

Parts List

For parts not listed here, see page 2

REF	NAME	CATALOG NUMBER
A	CASE, includes bushings installed,for shaft	P81-175
B	ARM, operating	P81-161
C	CASE COMPLETE, includes case, cover, strap, hasp, gaskets, and bushings for shaft	P81-178
1	CAM	P81-185
2	BOLT, for adjusting cams	P81-200
2A	NUT, for above	P81-118
2B	WASHER, for above	P81-103
2C	WASHER, for above	P81-150
2D	Cotter, for above	P81-100
3	SCREW, for locking cams	P81-117
3A	NUT, for above	P81-123
3B	WASHER, lock, for above	P81-205
4	SPRING, for operating contact arms	P81-115
5	ROLLER, for operating arms	P81-149
6	PIN, bearing for roller	P81-214
6A	PIN, locking, for above	P81-197



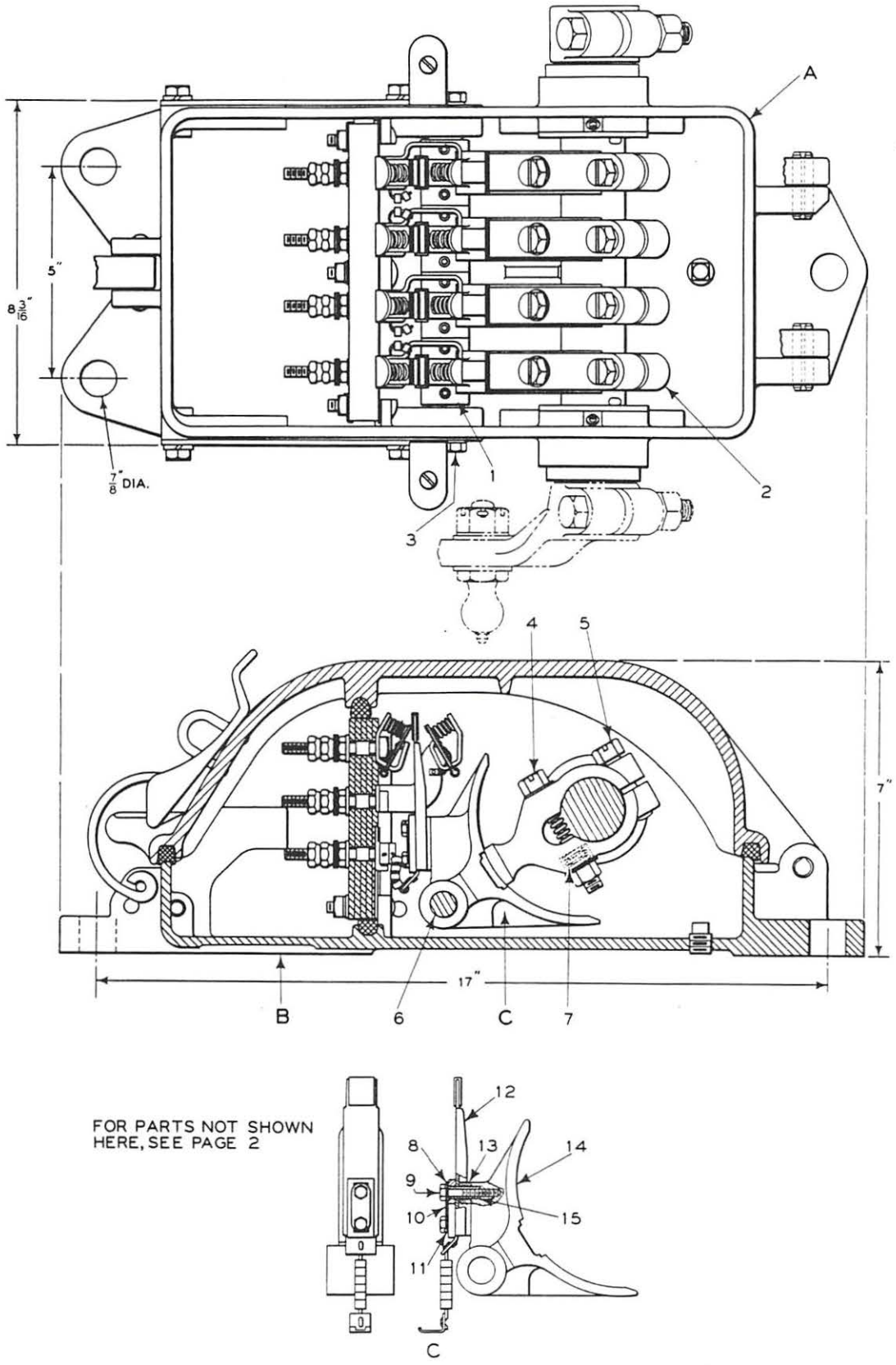
Switch circuit controllers
model 7K, catalog no. A81-105.

Switch Circuit Controllers
Model 7K

Parts List

For parts not listed here, see page 2.

REF.	NAME	CATALOG NUMBER
A	CASE, includes bushings installed, for shaft	P81-176
B	ARM, operating	P81-162
C	CASE COMPLETE, includes case, cover, strap gasket and bushings for shaft	P81-179
D	ARM COMPLETE, rocker, includes rollers and pins	P81-156
1	SPACER, intermediate	P81-155
2	SPACER, for ends and center	P81-154
3	CAM	P81-186
4	PIN, for fastening link to arm	P81-142
5	BOLT, for adjusting cams	P81-201
5 A	NUT, for above	P81-118
5 B	WASHER, for above	P81-103
5 C	WASHER, for above	P81-150
5 D	COTTER, for above	P81-100
6	SCREW, for locking cams	P81-117
6 A	NUT, for above	P81-123
6 B	WASHER, lock, for above	P81-205
7	SPRING, for operating contact arms	P81-108
8	LINK, for connecting rocker arm and operating arm	P81-167
9	SHAFT, for rocker arms	P81-166
10	PIN, for insulating link	P81-110
11	ROLLER, cam follower	P81-159
12	PIN, for roller	P81-111

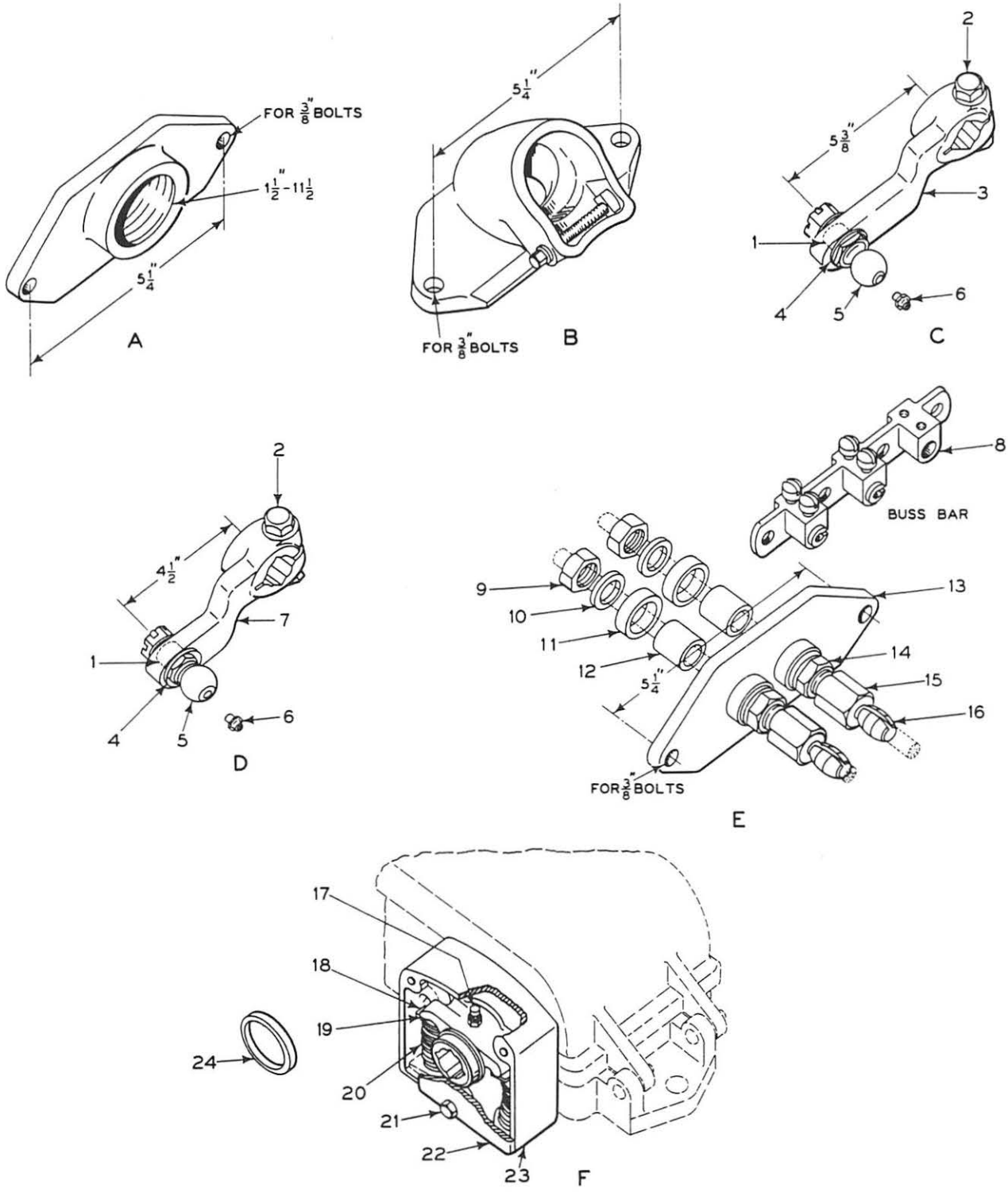


Switch circuit controllers, model 8.

Switch Circuit Controllers
Model 8
Parts List

For parts not listed here, see page 2.

REF.	NAME	CATALOG NUMBER
A	CASE, includes bushings installed, for shaft	P81-174
B	CASE COMPLETE, includes case, cover, strap, gaskets and bushings for shaft	P81-177
C	ARM COMPLETE, rocker	P81-168
1	BUSHING, eccentric	P81-182
2	CAM	P81-184
3	SCREW, for eccentric bushing	P81-191
3A	WASHER, for above	P81-170
4	BOLT, for adjusting cams	P81-201
4A	NUT, for above	P81-118
4B	WASHER, for above	P81-103
4C	WASHER, for above	P81-150
4D	COTTER, for above	P81-100
5	SCREW, for locking cam	P81-144
5A	WASHER, lock, for above	P81-205
6	SHAFT, for rocker arm	P81-202
7	SPRING	P81-113
8	WASHER, lock, for screw Ref. 9	P81-146
9	SCREW, for fastening finger to rocker arm	P81-136
10	WASHER, lock, for above	P81-145
11	INSULATION, for finger	P81-171
12	FINGER COMPLETE, includes contact and beaded connector	P81-207
13	INSULATION, for use between finger and rocker arm	P81-172
14	ARM, rocker	P81-169
15	BUSHING, for screws	P81-153



Switch circuit controller accessories.

Switch Circuit Controller Accessories Model 7J, 7K and 8

Parts List

REF.	NAME	CATALOG NUMBER
A	CAP, for wire outlet, with 1 1/2" - 11 1/2 std. pipe tapped hole	A81-130
B	COUPLING, 45 degree, for 1 1/2" flexible conduit	A81-131
C	CRANK, with insulated ball pin, 1" offset, 5 3/8" centers. See table on page 14	A81-135
D	CRANK, with insulated ball pin, 1" offset, 4 1/2" centers. See table on page 14	A81-137
E	CAP, for terminating shunt wires, for two .243" dia. cables, two required, also includes one buss bar Ref. 8	A81-147
E1	CAP, for terminating shunt wires, for two .190" dia. cables, two required, also includes one buss bar Ref. 8A	A81-149
F	CENTERING ATTACHMENT, for broken switch rod protection, includes gasket.	A81-151
1	BUSHING, insulating	P81-193
2	SCREW, for crank	P81-132
2A	NUT, for above	P81-147
2B	WASHER, lock, for above	P81-104
3	CRANK, only.	P81-187
4	WASHER, insulating, two required	P81-194
5	BALL PIN, drilled for fitting.	P81-192
5A	NUT, for above	P81-199
5B	WASHER, for above	P81-195
5C	COTTER, for above.	P81-101
6	FITTING, for cranks Refs. C and D	P81-140
7	CRANK, only	P81-188
8	BUSS BAR, for two .243" dia. cables	P81-212
8A	BUSS BAR, for two .190" dia. cables	P81-213
9	NUT, for connector	P81-152
10	WASHER, for nut.	P81-128
11	BUSHING, insulating	P81-134

Switch Circuit Controller Accessories Model 7J, 7K and 8

Parts List

REF.	NAME	CATALOG NUMBER
12	BUSHING, insulating	P81-135
13	CAP, only, for cap Refs. E and E1	P81-163
14	SLEEVE, for connector.	P81-173
15	NUT, for tightening sleeve Ref. 16 on cable.	P81-143
16	SLEEVE, for tightening on .243" dia. cable.	P81-139
16 A	Same as Ref. 16, except for .190" dia. cable	P81-138
17	SET SCREW, for fastening centering device to shaft	P81-131
17 A	NUT, for above	P81-203
17 B	WASHER, lock, for above	P81-122
18	PIVOT, for arm	P81-211
19	ARM, for shaft	P81-210
20	SPRING	P81-112
21	SCREW, for cover	P81-198
21 A	WASHER, lock, for above	P81-122
22	COVER, only, for centering device	P81-208
23	CASE, only, for centering device	P81-209
24	GASKET, rubber, for use between centering device and switch circuit controller	P81-137

Max. Throw of Cranks Refs. C and D

Crank Ref.	Centers of Crank	Used on Switch Circuit Controller	* Max. Throw or Stroke
C	5 3/8"	Model 7J	6 1/2"
"	"	Model 7K	7"
"	"	Model 8	5 1/2"
D	4 1/2"	Model 7J	5"
"	"	Model 7K	5 7/8"
"	"	Not recommended for Model 8	——

* Maximum permissible connecting rod movement.

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SWITCH CIRCUIT CONTROLLERS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P81-100	035-1		COTTER	7, 9, 11
P81-101	040		COTTER	13
P81-102	046-1		COTTER	4
P81-103	01250-14		WASHER	
P81-105	352-11		SCREW	3
P81-106	441-705		STUD	3
P81-107	441-707		STUD	3
P81-108	586-26		SPRING	9
P81-109	626-104		WASHER	3
P81-110	730-40		PIN	9
P81-111	730-44		PIN	9
P81-112	786-303		SPRING	14
P81-113	786-223		SPRING	11
P81-114	786-288		SPRING	4
P81-115	786-338		SPRING	7
P81-116	0114		RIVET	4
P81-117	0280-1		SCREW	7, 9
P81-118	0293-4		NUT	7, 9, 11
P81-119	0305		RIVET	4
P81-120	0430-1		SCREW	3
P81-121	01273-6		WASHER	3
P81-122	01273-8		WASHER	
	(SEE P71)			
P81-123	0689-9		NUT	7, 9
P81-124	0694		PLUG	4
P81-125	0471-56		BOLT	3
P81-126	0471-59		BOLT	3
P81-127	1156-12		NUT	3
P81-128	1225-142		WASHER	13
P81-129	1601-104		WASHER	4
P81-130	2848		WASHER	3
P81-131	3169-2		SCREW	14
P81-132	3343-27		SCREW	13
P81-133	6170-2		SCREW	3
P81-134	7350-164		BUSHING	13
P81-135	7350-171		BUSHING	14
P81-136	13006-53		SCREW	11
P81-137	13014-299		GASKET	14
P81-138	15284-24		SLEEVE	14
P81-139	15284-25		SLEEVE	14
P81-140	34232-31		FITTING	3, 13
P81-141			STAPLE W/NUTS	4
	16914-16		STAPLE	
	42333-47	2	NUTS	
P81-142	20254-1		PIN	9
P81-143	20673-9		NUT	14
P81-144	21931-1		SCREW	11
P81-145	22543-38		WASHER	11
P81-146	22543-39		WASHER	11
P81-148	30646-16		GASKET FT.	4
P81-150	01250-15		WASHER	7, 9, 11
P81-151	35460-2		BOARD	3
P81-152	35315-15		NUT	13
P81-153	35282-12		BUSHING	11
P81-154	35462-1		SPACER	9
P81-155	35462-3		SPACER	9
P81-156	35465 GR2		ARM	9
P81-159	35478		ROLLER	9
P81-160	35480		STRAP	4
P81-163	35491-18		CAP	14
P81-164	35491-33		CAP	3
P81-165	35497-2		HASP	4
P81-166	35499-2		SHAFT	9
P81-167	35505-43		LINK	9
P81-168	35511-1GR2		ARM	11
P81-169	35512-5		ARM	11
P81-171	37412-180		INSULATION	11
P81-172	37412-181		INSULATION	11
P81-173	37566-4		SLEEVE	14
P81-175	38497-6GR1		CASE	7
P81-176	38497-6GR2		CASE	9
P81-178	38638-12GR7		CASE	7
P81-179	38638-12GR8		CASE	9
P81-180	38639-4GR5		COVER	4
P81-181	38643-13		BUSHING	4
P81-182	38643-25		BUSHING	11
P81-183	38651-17		SHAFT	4
P81-184	38653-14GR2		CAM	11
P81-185	38653-15GR1		CAM	7
P81-186	38653-16GR1		CAM	9
P81-187	38661-33		CRANK	13
P81-188	38661-37		CRANK	13
P81-189	39997-5		SHIELD	3
P81-191	42302-14		SCREW	11
P81-192	43206-6		BALL PIN	13
P81-193	43207		BUSHING	13

CATALOG SECTION P81

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SWITCH CIRCUIT CONTROLLERS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P81-194	43208		WASHER	13
P81-195	43209		WASHER	13
P81-197	47230-2		PIN	7
P81-198	50566-1		SCREW	14
P81-199	50748-5		NUT	13
P81-200	51596-2		BOLT	7
P81-201	51596-7		BOLT	9, 11
P81-202	52240-29		SHAFT	11
P81-203	52822-6		NUT	14
P81-204	52981-3		VENTILATOR	3
P81-205	53029-77		WASHER	7, 9, 11
P81-207	53778-3GR1		FINGER	11
P81-208	53684-3		COVER	14
P81-209	53683-4		CASE	14
P81-210	53685-1		ARM	14
P81-211	53687-1		PIVOT	14
P81-212	57549 GR2		BUSS BAR	13
P81-213	57549 GR5		BUSS BAR	13
P81-214	15350-56		PIN	7
P81-216	38639-4GR7		COVER	4
P81-217	17188-62		PIN	

CATALOG SECTION P85
PARTS LIST
Electric Switch Machines
Models 5A, 5E, 5F, 5G, and 5H
FOR ASSEMBLIES, SEE CATALOG SEC. 85-1

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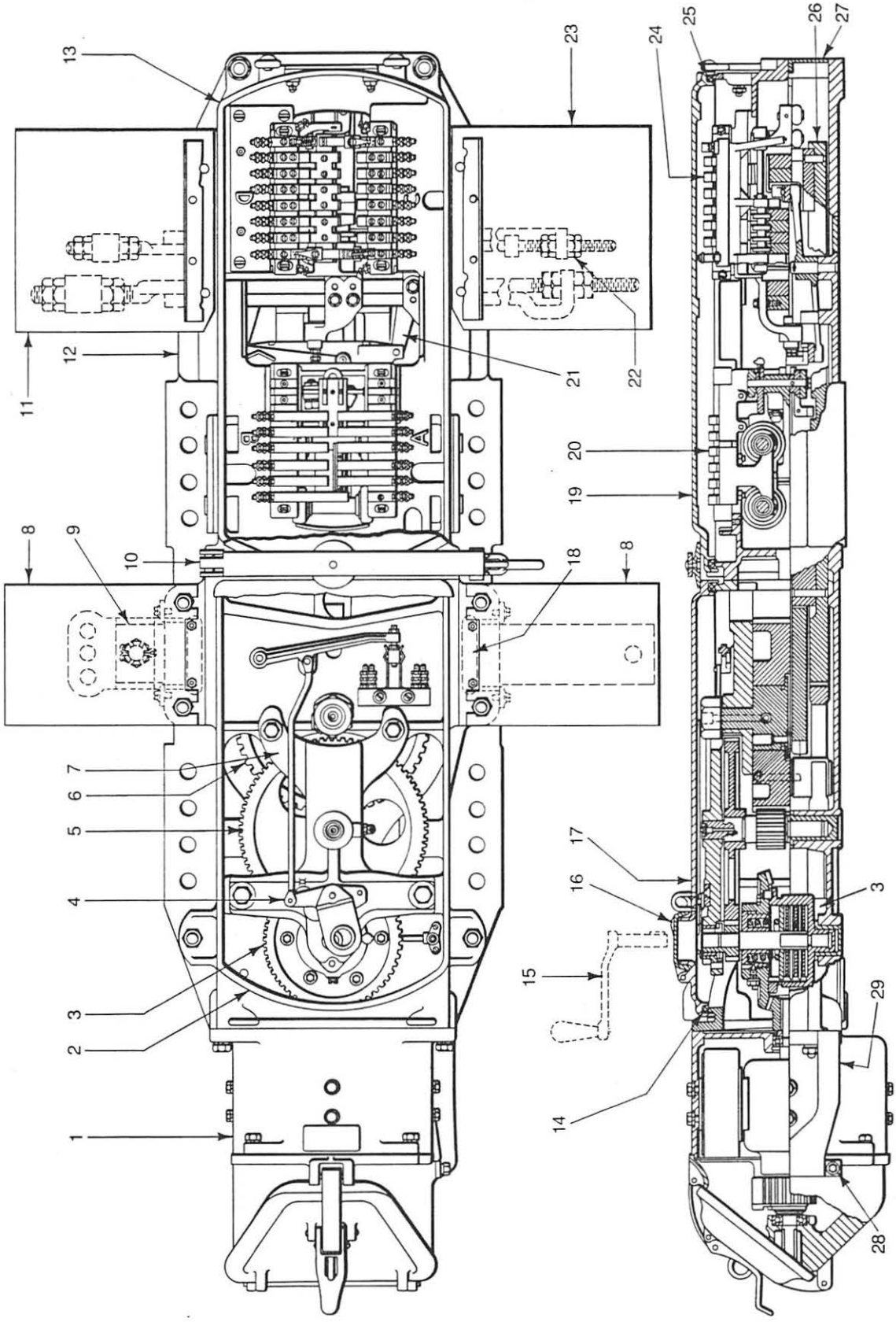
GENERAL INFORMATION

Parts for Models 5A, 5E, 5F, 5G & 5H switch machines are listed beginning on page 2. The Model 5A shown on page 2 also includes common parts for the Models 5E and 5G. The Model 5F shown on page 6 includes common parts for the Models 5F and 5H.

GENERAL RAILWAY SIGNAL
A UNIT OF GENERAL SIGNAL

A1628 PRINTED IN U.S.A. May 1988



Model 5A switch machine.

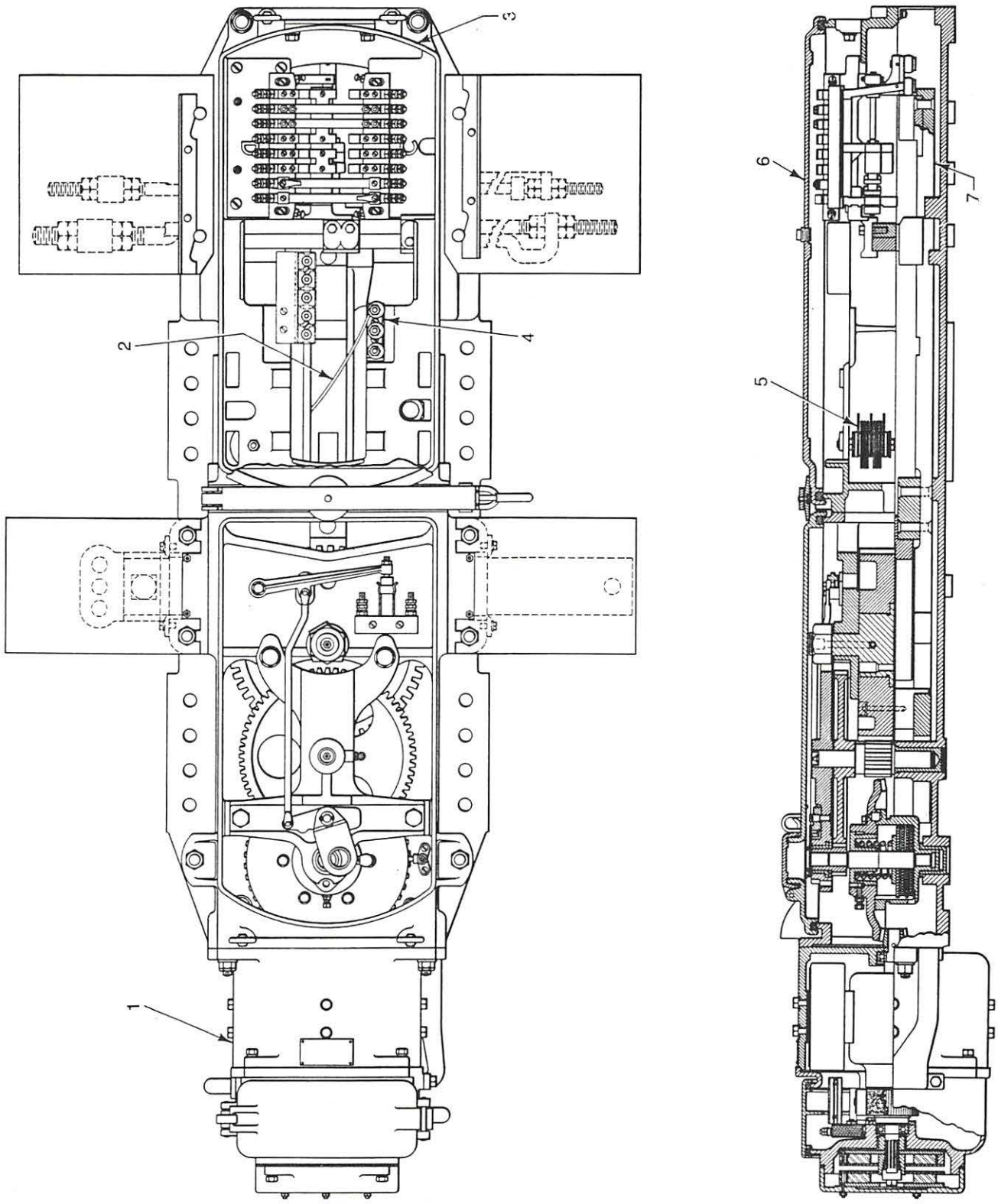
Model 5A Switch Machines

Common Parts List for models 5A, 5E and 5G

For parts not listed here, see lists under specific models, pages 5 and 9

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	**MOTOR COMPLETE,** for references see page 55	
2	**FRAME,** gear, for references see page 23	
3	**CLUTCH COMPLETE,** for references see page 13	
4	**CUT-OUT SWITCH,** for references see page 13	
5	**GEAR COMPLETE,** intermediate, for references see page 13	
6	**GEAR COMPLETE,** main, for references see page 13	
7	**BRACKET,** for references see page 29	
8	**GUARD,** for throw bar	P85-595
9	**THROW BAR,** for references see page 27	
10	**HASP COMPLETE,** for references see page 27	
11	**GUARD,** right-hand, for lock and point-detector rods	P85-738
12	**FRAME,** main bed, for references see page 23	
13	**FRAME,** contact, for references see page 23	
14	**GASKET,** 6'-0" long, for cover Ref. 17, specify number feet	P85-457
15	**HAND CRANK**	P85-826
16	**COVER COMPLETE,** for crank opening, includes hinge pin	P85-788
17	**COVER COMPLETE,** for gear compartment	P85-472
18	**GASKET,** for throw bar	P85-297
19	**COVER COMPLETE,** for contact compartment	P85-473
20	**POLE-CHANGER MOVEMENT AND CONTACT GROUP,** for references see page 31	
21	**LINK MOTION,** for references see page 41	
22	**LOCK ROD AND POINT-DETECTOR ROD GROUPS,** for references see page 39	
23	**GUARD,** left-hand, for lock and point-detector rods	P85-737
24	**POINT-DETECTOR MOVEMENT AND CONTACT GROUP,** for references see page 36	
25	**GASKET,** 6'-6" long, for cover Ref. 19, specify number feet	P85-457
26	**CAM BAR COMPLETE,** for references see page 27	
27	**FILLER BLOCK,** for cam bar opening	P85-725
28	**SCREW,** for fastening coupling to motor	P85-242
28A	**WASHER,** lock, for above	P76-106
29	**COUPLING,** wire inlet to motor	P85-562



Model 5E switch machine.

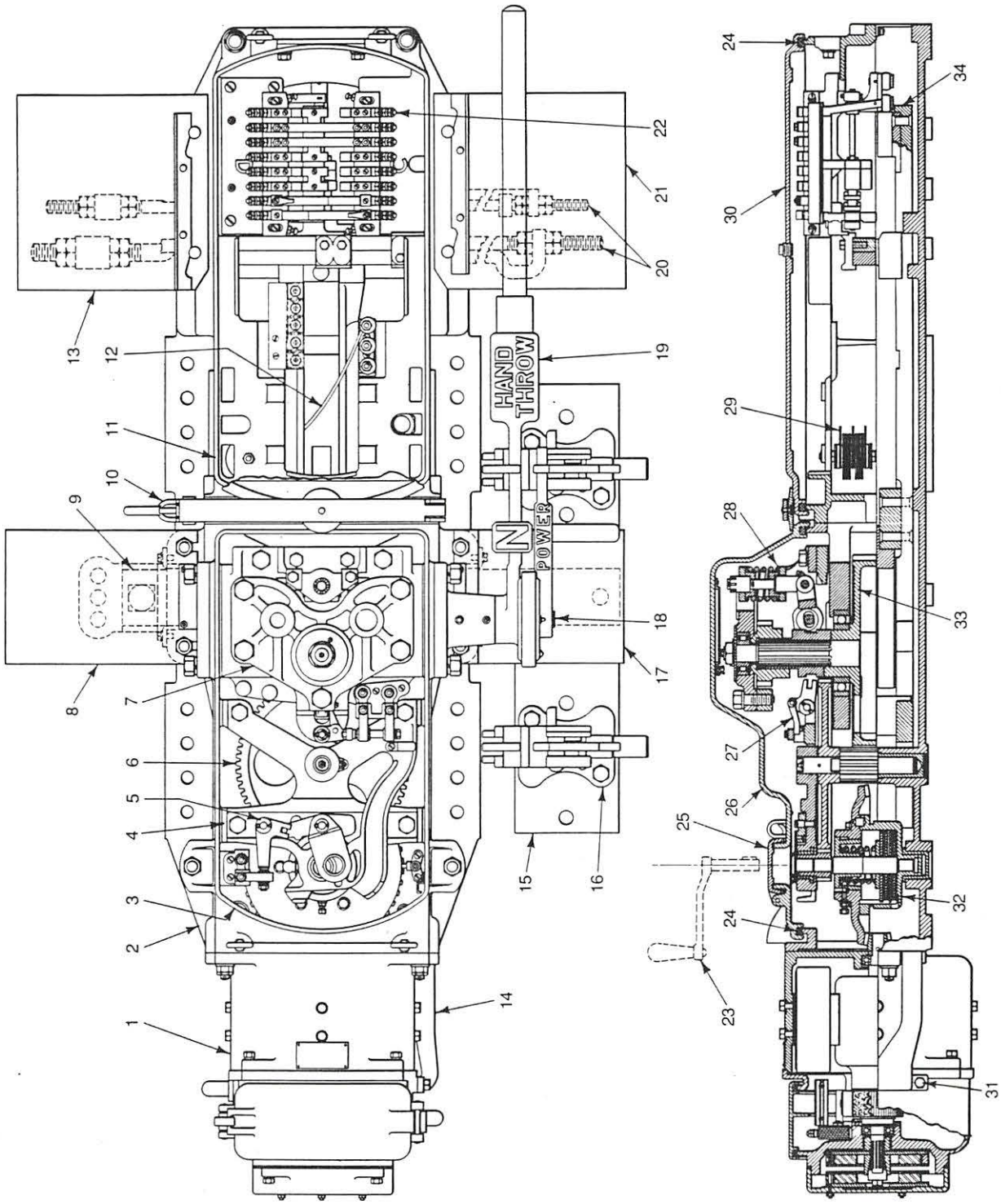
Model 5E Switch Machines

Parts List

For parts not listed here, see page 3.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	**MOTOR COMPLETE,** for references see page 51	
2	**CONNECTOR,** 9.95 - 1.05 ohms, for 110-volt machine only	**P85-977**
3	**FRAME,** contact, for references see page 23	
4	**TERMINAL BLOCK**	**P85-548**
5	**RECTIFIER,** for 110-volt switch machine	**A53-321**
5A	As above, except for 24-volt switch machine	**A53-322**
6	**COVER COMPLETE,** for contact compartment	**P85-473**
7	**CAM BAR COMPLETE,** for references see page 27	



Model 5F switch machine.

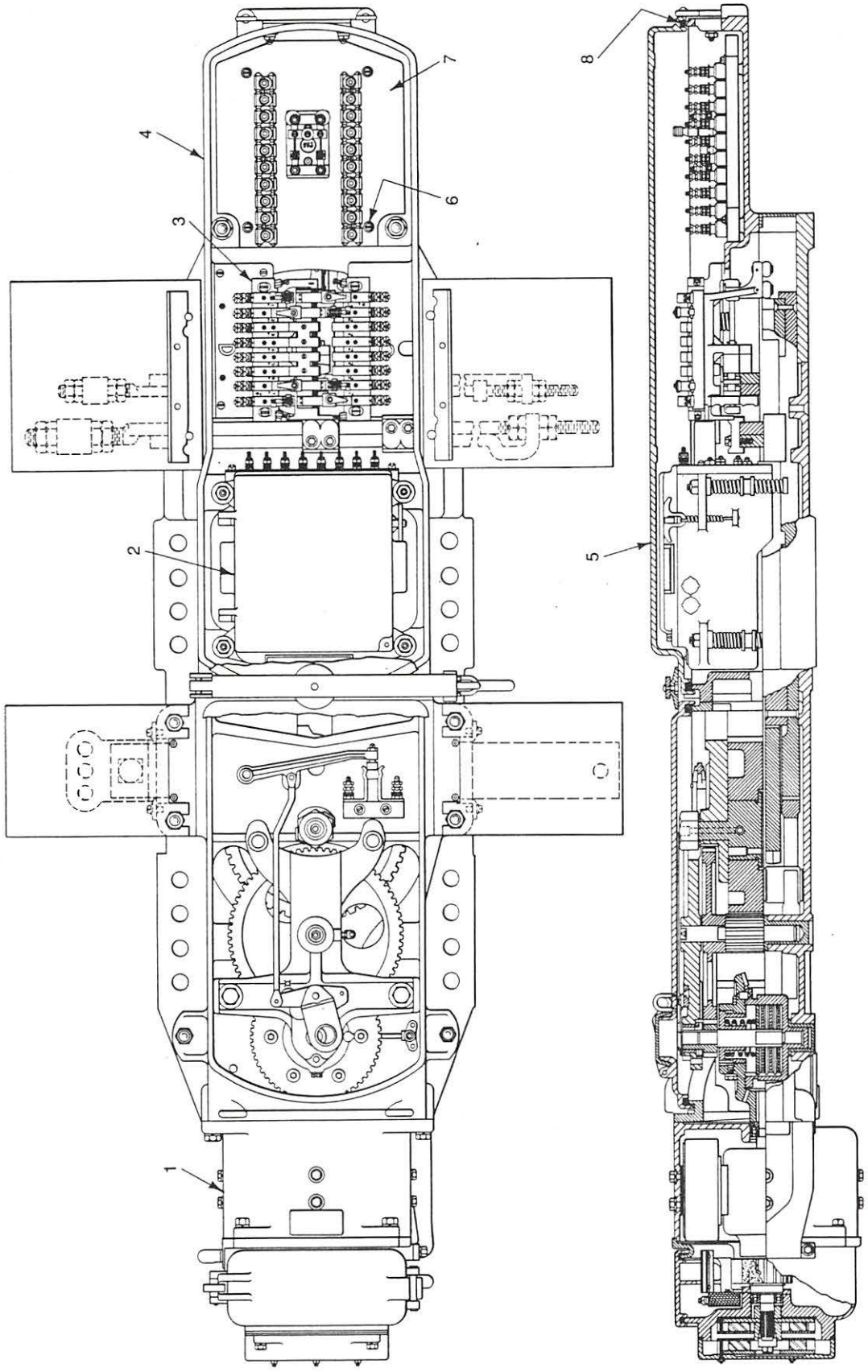
Model 5F Switch Machines

Common Parts List for Models 5F and 5H

For parts not listed here, see lists under Model 5H, page 11.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	**MOTOR COMPLETE,** for references see page 51	
2	**FRAME,** main bed, for references see page 23	
3	**FRAME COMPLETE,** gear, for references see page 23	
4	**BRACKET,** for clutch and gear, for references see page 29	
5	**CUT-OUT SWITCH,** for references see page 13	
6	**GEAR,** intermediate, for references see page 13	
7	**PLATE,** top, for bearing bracket, for references see page 29	
8	**GUARD,** for throw bar, for use in position shown	P85-595
9	**THROW BAR,** for references see page 27	
10	**HASP COMPLETE,** for references see page 27	
11	**FRAME,** contact, for references see page 23	
12	**CONNECTOR,** 0.95-1.05 ohms, for 110-volt machine only	P85-977
13	**GUARD,** right-hand, for lock and point detector rods	P85-738
14	**COUPLING,** for motor	P85-562
15	**PLATE,** for lock stand, for references see page 29	
16	**LOCK STAND COMPLETE,** for references see page 29	
17	**GUARD,** for throw bar, for use on lever side of machine	P85-596
18	**SELECTOR LEVER COMPLETE,** for references see page 19	
19	**HAND-THROW LEVER COMPLETE,** for references see page 19	
20	**LOCK AND POINT-DETECTOR RODS,** for references see page 39	
21	**GUARD,** left-hand, for lock and point-detector rods	P85-737
23	**CRANK,** for hand operation	P85-826
24	**GASKET,** 6' 6" long, for cover Ref. 26 and 30, specify number of feet	P85-457
25	**COVER COMPLETE,** for crank opening, includes hinge pin	P85-788
26	**COVER COMPLETE,** for gear compartment	P85-476
27	**SELECTOR LEVER SWITCH,** for references see page 19	
28	**CLUTCH SHIFTER COMPLETE,** for references see page 19	
29	**RECTIFIER,** for 110-volt machines	A53-321
29A	As above, except for 24-volt machines	A53-322
30	**COVER COMPLETE,** for contact compartment, not for Model 5H (see page 13)	P85-473
31	**SCREW,** for fastening coupling to motor	P85-242
31A	**WASHER,** lock, for above	P76-106
32	**CLUTCH COMPLETE,** for references see page 13	
33	**GEAR COMPLETE,** main, for references see page 13	
34	**CAM BAR COMPLETE,** for references see page 27	



Model 5G switch machine.

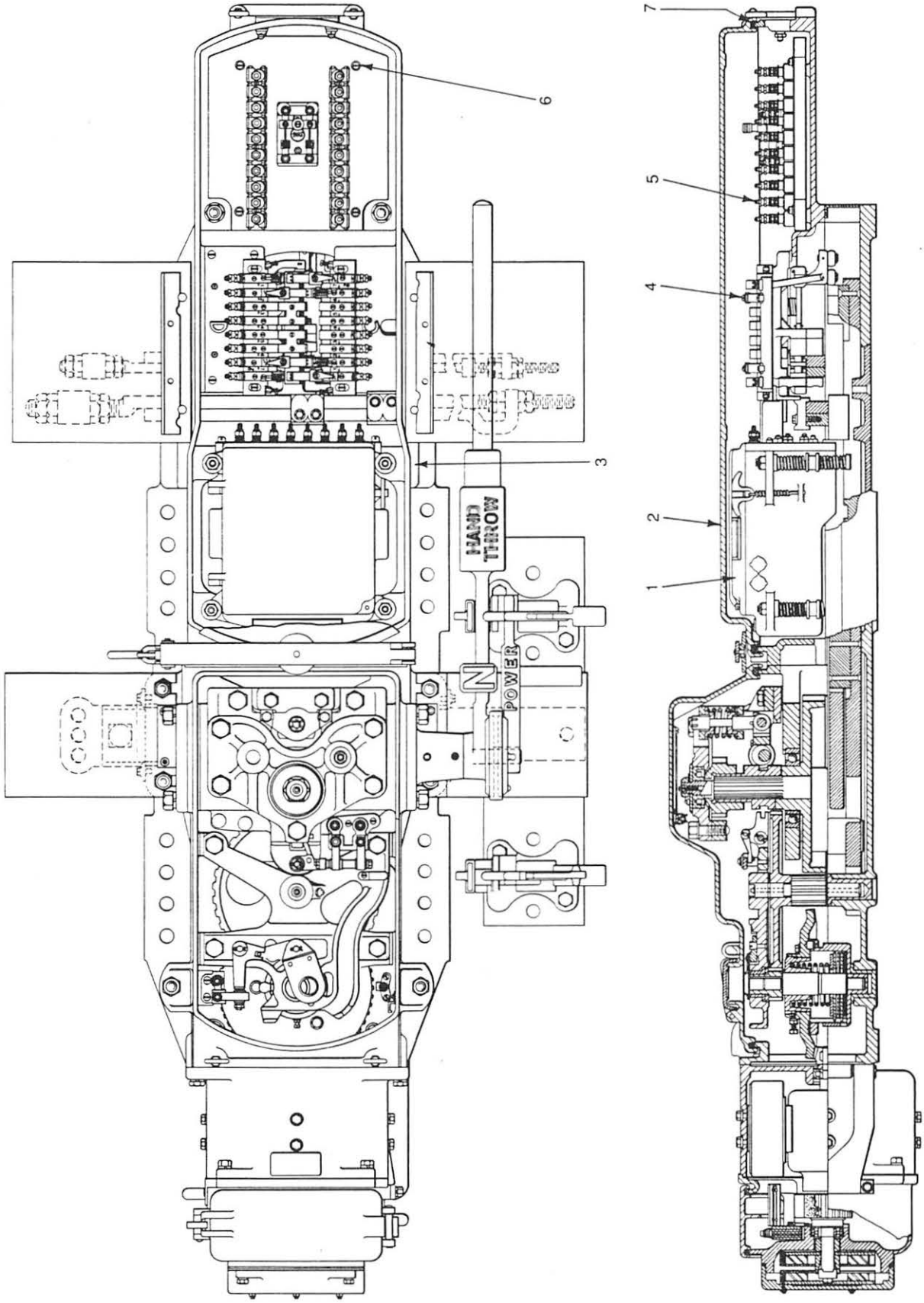
Model 5G Switch Machines

Parts List

For parts not listed here, see page 3.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	**MOTOR COMPLETE,** for references see page 51	
2	**CONTROLLER COMPLETE,** biased-neutral, for references see page 43	
3	**POINT DETECTOR MOVEMENT AND CONTACT GROUP,** for references see page 36	
4	**FRAME,** contact, for references see page 23	
5	**COVER COMPLETE,** for contact compartment	**P85-475**
6	**SCREW,** for mounting terminal board	**P85-248**
6A	**WASHER,** lock, for above	**P85-111**
7	**TERMINAL BOARD COMPLETE,** for references see page 59	
8	**GASKET,** 8'-7" long, for cover Ref. 5, specify number of feet	**P85-457**



Model 5G switch machine.

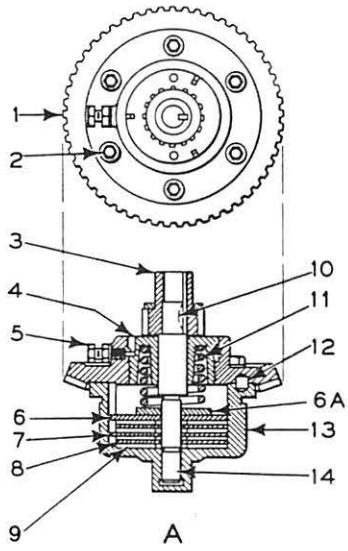
Model 5H Switch Machines

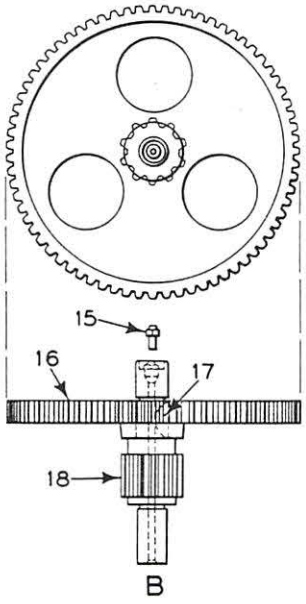
Parts List

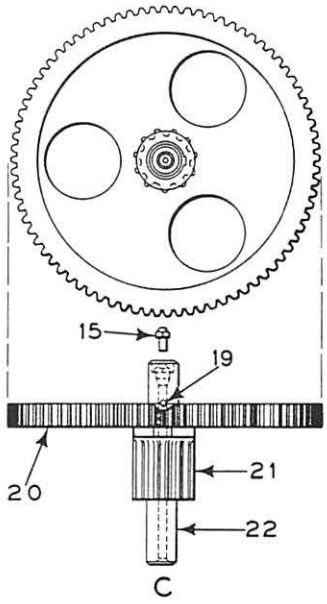
For parts not listed here, see page 7.

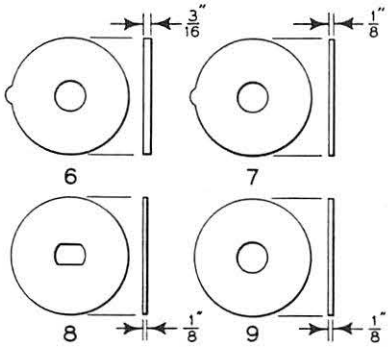
Order by catalog number and name shown in bold type

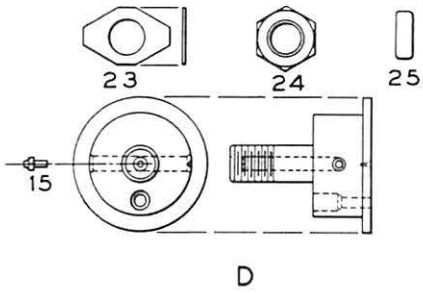
REF.	NAME	CATALOG NUMBER
1	**CONTROLLER COMPLETE,** biased-neutral, for references see page 43	
2	**COVER COMPLETE,** for contact compartment	**P85-475**
3	**FRAME,** contact, for references see page 23	
4	**POINT-DETECTOR MOVEMENT AND CONTACT GROUPS,** for references see page 36	
5	**TERMINAL BOARD COMPLETE,** for references see page 59	
6	**SCREW,** for mounting terminal board	**P85-248**
6A	**WASHER,** lock, for above	**P85-111**
7	**GASKET**, 8'-7" long, for cover Ref. 2, specify number feet	**P85-457**

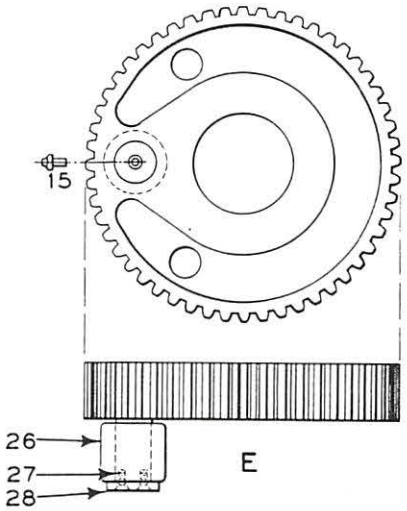


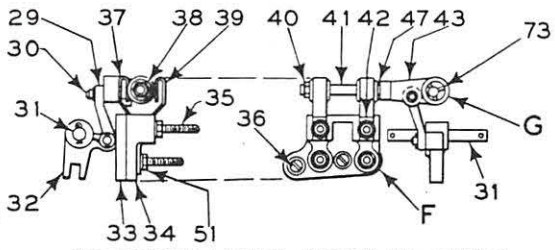




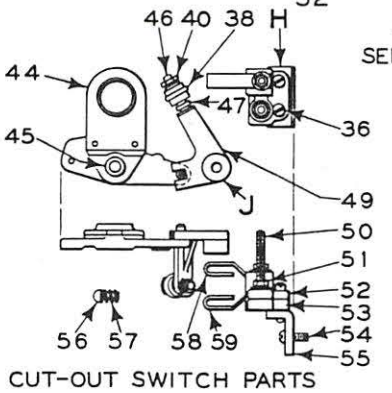




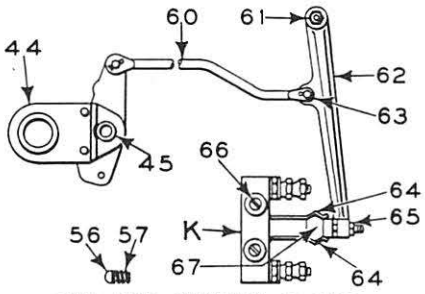




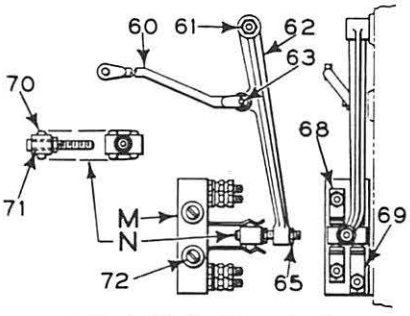
SELECTOR-LEVER CONTACT PARTS



CUT-OUT SWITCH PARTS



CUT-OUT SWITCH PARTS



CUT-OUT SWITCH PARTS

Detail Parts for switch machines.

Detail Parts for Switch Machines

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**CLUTCH COMPLETE,** for 110-volt Models 5A, 5E, and 5G switch machines, has 16 tooth pinion and 60 tooth gear	**P85-478**
A1	As above, except for 110-volt Models 5F and 5H switch machines, has 19 tooth pinion and 60 tooth gear	**P85-479**
A2	Same as Ref. A, except for 24-volt Models 5E and 5G switch machines, has 12 tooth pinion and 75 tooth gear	**P85-480**
A3	Same as Ref. A, except for 24-volt Models 5F and 5H switch machines, has 14 tooth pinion and 75 tooth gear	**P85-481**
B	**GEAR COMPLETE,** intermediate, for 110-volt Models 5A, 5E and 5G switch machines, has 10 tooth pinion and 80 tooth gear	**P85-599**
B1	As above, except for 24-volt Models 5E and 5G switch machines, has 10 tooth pinion and 84 tooth gear	**P85-600**
C	**GEAR COMPLETE,** intermediate, for 110-volt Models 5F and 5H switch machines, has 11 tooth pinion and 74 tooth gear	**P85-501**
C1	As above, except for 24-volt Models 5F and 5H switch machines, has 11 tooth pinion and 79 tooth gear	**P85-500**
D	**BEARING,** for main gear	**P85-512**
D1	**BEARING,** for main gear, for replacement orders only	**P85-1380**
E	**GEAR COMPLETE,** main, 53 teeth, for Model 5A, 5E and 5G switch machines	**P85-598**
F	**BLOCK COMPLETE,** includes contact springs, terminal posts, base nuts and washers	**P85-912**
G	**SWITCH LEVER COMPLETE,** includes link Ref. 29, bushing Ref. 73 and contacts	**P85-855**
H	**BLOCK COMPLETE,** for motor cut-out switch, includes contact springs	**P85-775**
J	**SWITCH LEVER COMPLETE,** for motor cut-out switch, includes contact button	**P85-857**
K	**TERMINAL BLOCK COMPLETE,** with one set of contact fingers	**P85-774**
M	**TERMINAL BLOCK COMPLETE,** with two sets of contact fingers	**P85-549**
N	**CONTACT COMPLETE,** for double contact cut-out switch, for Model 5A switch machine only	**P85-450**
1	**GEAR,** 60 teeth, for 110-volt switch machines	**P85-510**
1A	As above, except 75 teeth, for 24-volt switch machines	**P85-511**
2	**SCREW,** for fastening gear to case	**P85-129**
2A	**WASHER,** lock, for above	**P76-106**
3	**PINION,** 16 teeth, for clutch Ref. A	**P85-606**
3A	As above, except 19 teeth, for clutch Ref. A1	**P85-609**
3B	Same as Ref. 3, except 12 teeth, for clutch Ref. A2	**P85-607**
3C	Same as Ref. 3, except 14 teeth, for clutch Ref. A3	**P85-608**

Detail Parts for Switch Machines
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
4	**NUT,** for spring	**P85-521**
5	**SCREW,** for locking nut Ref. 4	**P85-359**
5A	**NUT,** for above	**P85-205**
6	**DISC,** metal, for clutch	**P85-520**
6A	**WASHER,** for clutch	**P85-913**
7	**DISC,** metal for clutch	**P85-519**
8	**DISC,** metal for clutch	**P85-518**
9	**DISC,** metal for clutch	**P85-517**
10	**KEY,** for fastening pinion to shaft	**P85-101**
11	**SPRING,** for clutch	**P85-192**
12	**PIN**	**P85-336**
13	**CASE**	**P85-516**
14	**SHAFT**	**P85-522**
15	**FITTING,** grease, 1/4" straight drive	**P85-380**
16	**GEAR,** 80 teeth, for gear Ref. B	**P85-495**
16A	As above, except 84 teeth, for gear Ref. B1	**P85-496**
17	**KEY,** for fastening shaft to gear	**P85-102**
18	**SHAFT,** with 10 tooth pinion, for gears Refs. B and B1	**P85-506**
19	**PIN,** for fastening gear to shaft	**P85-162**
20	**GEAR,** 74 teeth, for gear Ref. C	**P85-499**
20A	As above, except 79 teeth, for gear Ref. C1	**P85-498**
21	**PINION,** 11 teeth, for gears Refs. C and C1	**P85-508**
22	**SHAFT,** only, for gears Refs. C and C1	**P85-523**
23	**WASHER,** lock, for nut Ref. 24	**P85-239**
24	**NUT,** 1-1/16" thick, for bearing Ref. D	**P85-171**
25	**PIN,** for bearing Ref. D	**P85-332**
26	**ROLLER,** for main bearing	**P85-514**
27	**SCREW,** for plate Ref. 28	**P62-176**
28	**PLATE,** for roller Ref. 26	**P85-727**
29	**LINK,** for lever	**P85-402**
30	**STUD,** for link	**P85-152**
30A	**WASHER,** for studs Ref. 30 and 32A	**P50-157**

Detail Parts for Switch Machines
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
31	**PIN,** for switch lever	**P85-306**
32	**LEVER COMPLETE,** with stud	**P85-859**
32A	**STUD,** for above	**P85-153**
33	**BLOCK,** for use under blocks Refs. F and 34	**P85-779**
34	**BLOCK,** for mounting contact springs	**P85-780**
35	**SCREW,** terminal post for block Ref. F	**P65-102**
35A	**WASHER,** lock, for above	**P85-801**
36	**SCREW,** 1/4"-20, for fastening blocks Refs. 33, 34, 52 and 53 to bracket	**P85-248**
36A	As above, except 14-24	**P85-931**
36B	**WASHER,** lock, for above	**P62-402**
37	**SPRING,** contact, 2-7/8" long	**P85-579**
38	**BUTTON,** contact, for lever	**P85-551**
39	**SPRING,** contact, 1-7/8" long	**P85-580**
40	**NUT,** for stud lever Ref. 43	**P85-278**
41	**STUD,** for contact button	**P85-202**
42	**WASHER,** plate, for contact springs	**P85-219**
43	**LEVER,** with bushing Ref. 73, for selector-lever switch Ref. G	**P85-914**
44	**CRANK COMPLETE,** includes stud for rob	**P85-705**
45	**WASHER,** for crank	**P81-150**
46	**STUD,** for lever Ref. 49	**P85-156**
47	**NUT,** lock, for button Ref. 38	**P85-550**
48	(not used)	
49	**LEVER,** only	**P85-817**
50	**SCREW,** terminal post for block Ref. H	**P65-101**
51	**NUT,** for screws Refs. 35 and 50	**P62-333**
52	**BLOCK,** for mounting contact springs	**P85-782**
53	**BLOCK,** for use under block Ref. 52	**P85-781**
54	**SCREW,** 1/4" - 20, for mounting bracket to frame	**P85-247**
54A	As above, except 14-24	**P85-930**
54B	**WASHER,** lock for above	**P62-402**
55	**BRACKET,** for mounting block Ref. H to frame	**P85-373**
56	**PLUNGER,** for control switch	**P85-354**

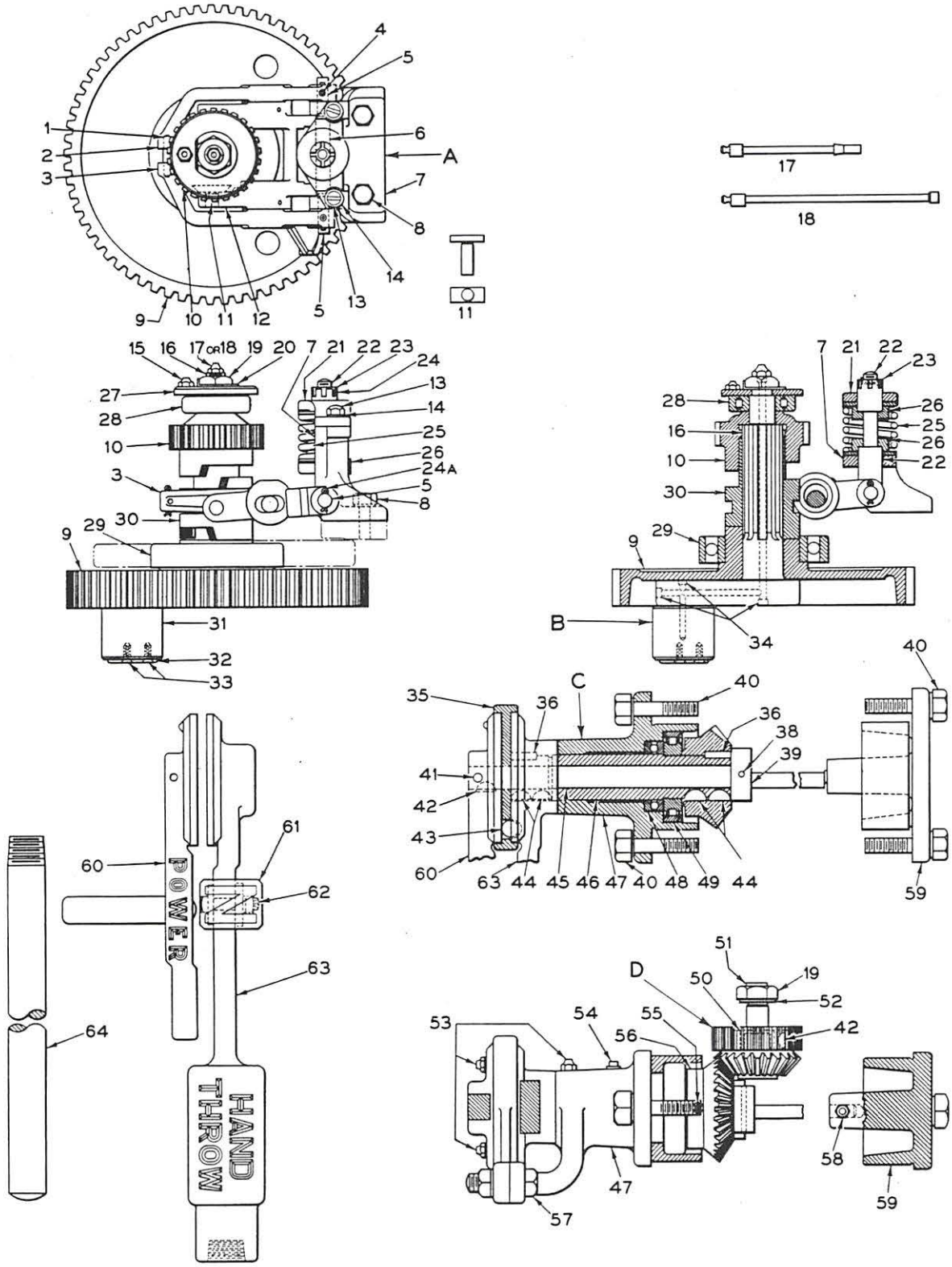
Detail Parts for Switch Machines

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
57	**SPRING,** for plunger	**P85-193**
58	**SPRING,** contact, upper, 2-3/16" long	**P85-578**
59	**SPRING,** contact, lower, 2-1/16" long	**P85-746**
60	**ROD,** for cut-out switch	**P85-249**
61	**STUD,** for lever	**P85-771**
62	**LEVER,** only	**P85-777**
63	**PIN,** for lever	**P85-778**
64	**FINGER,** contact	**P85-770**
65	**NUT,** for fastening contact to lever	**P85-561**
66	**SCREW,** for mounting block Ref. K	**P73-137**
66A	**WASHER,**lock for above	**P81-121**
67	**CONTACT,** for cut-out switch	**P85-776**
68	**FINGER,** contact	**P85-388**
69	**FINGER,** contact	**P85-389**
70	**CONTACT,** only, for Ref. N	**P85-300**
71	**BUSHING,** insulating, for screw	**P85-915**
72	**SCREW,** for mounting block Ref. M	**P85-462**
72A	**WASHER,** lock, for above	**P81-121**
73	**BUSHING,** for levers Refs. G or 43	**P85-940**

Memoranda



Selector-lever and hand-throw parts.

Selector-Lever and Hand-Throw Parts

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**CLUTCH SHIFTER COMPLETE,** for shifting from power to hand-throw, comprises parts Refs. 1, 2, 3, 4, 5, 6, 7, 12, 13, 14, 21 through 26	**P85-852**
B	**CRANK COMPLETE,** with roller, for operating throw bar, does not include fittings, Refs. 17 or 18	**P85-853**
C	**HAND-THROW LEVER COMPLETE,** includes Refs. 36, 44, 46, 47, 48, 49, 53, 54, 55, 56, 61, 61A, 62, and 63 - only, if extension (Ref. 64) is needed you must order it separately	**P85-851**
D	**GEAR COMPLETE,** for hand-throw operation, includes 27 tooth spur gear and 24 gear tooth bevel gear pinned and keyed together	**P85-839**
1	**STUD,** for connecting selector lever contacts to yoke	**P85-917**
2	**YOKE,** for operating selector lever contacts	**P85-848**
3	**YOKE,** for operating selector lever contacts	**P85-850**
4	**PIN,** for pin Ref. 5	**P85-169**
5	**PIN,** for fastening yokes Ref. 2 and 3 to bracket Ref. 7	**P85-167**
6	**PIN,** for fastening eyebolt to yoke	**P85-168**
7	**BRACKET,** with pins Refs. 4 and 5 for clutch shifter unit	**P85-1177**
8	**SCREW,** for mounting clutch shifter	**P50-129**
8A	**WASHER,** lock, for above	**P50-101**
9	**GEAR,** main, 67 teeth	**P85-497**
10	**GEAR COMPLETE,** clutch, 25 teeth	**P85-840**
11	**TRUNNION,** for yoke	**P85-351**
12	**YOKE,** for operating clutch sleeve Ref. 30	**P85-849**
13	**SCREW,** for fastening cap Ref. 21 to bracket Ref. 7	**P85-227**
14	**WASHER,** lock, for screw Ref. 13	**P81-122**
15	**FITTING,** grease, for bearing Ref. 28	**P85-380**
16	**CRANK,** splined	**P85-918**
17	**FITTING,** oiler, top	**P85-383**
18	**FITTING,** oiler, bottom	**P85-382**
19	**NUT,** for crank Ref. 16 and stud Ref. 51	**P85-250**
20	**WASHER,** for nut Ref. 19	**P85-181**
21	**CAP,** for top of bracket Ref. 7	**P85-824**
22	**EYEBOLT,** for clutch shifter	**P85-436**
23	**NUT,** for eyebolt	**P85-431**
24	**PIN,** roll, for nut Ref. 23	**P62-238**

Selector-Lever and Hand-Throw Parts
Parts List

Order by catalog number and name shown in bold type

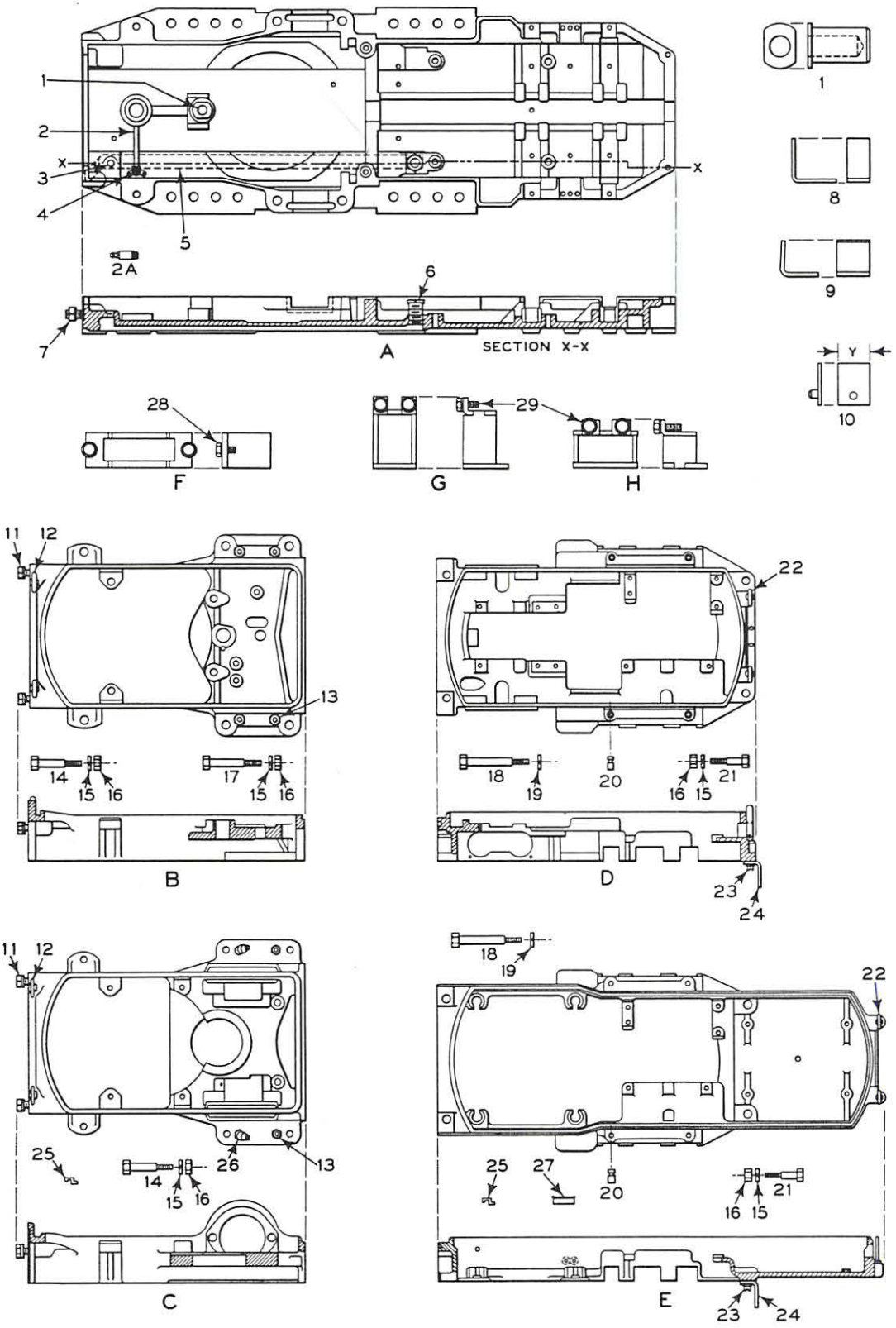
REF.	NAME	CATALOG NUMBER
24A	**COTTER,** for nut Ref. 23	**P85-106**
25	**SPRING,** for clutch shifter	**P85-196**
26	**COLLAR,** for spring Ref. 25	**P85-412**
27	**WASHER,** for bearing Ref. 28	**P85-180**
28	**BEARING,** for upper end of crank shaft	**P85-570**
29	**BEARING,** for main gear	**P85-571**
30	**SLEEVE,** clutch, splined, for crank	**P85-175**
31	**ROLLER,** for main crank	**P85-514**
32	**PLATE,** for roller	**P85-727**
33	**SCREW,** for fastening plate to crank	**P62-176**
34	**PIN,** for plugging oil holes in crank	**P85-166**
35	**PLATE,** for use between selector lever and hand-throw lever	**P85-846**
36	**PIN,** for fastening gear Ref. 56 to shaft, also for fastening hand-throw lever to shaft	**P85-164**
38	**PIN,** roll, for collar	**P85-317**
39	**COLLAR,** for shaft Ref. 45	**P85-143**
40	**SCREW,** for mounting bearings Refs. 47 and 59 to gear frame	**P85-123**
40A	**WASHER,** lock, for above	**P85-109**
41	**PIN,** roll, for fastening selector lever to shaft Ref. 45	**P85-316**
42	**KEY,** for fastening selector lever to shaft also for gear Ref. D	**P85-101**
43	**BALL,** for use between selector and hand-throw levers	**P85-403**
44	**KEY,** for fastening hand-throw lever to shaft, also for fastening bevel gear Ref. 56 to shaft Ref. 46	**P85-104**
45	**SHAFT COMPLETE,** includes collar and pin	**P85-704**
46	**SHAFT,** for hand-throw lever	**P85-515**
47	**BEARING,** bracket, for hand-throw and selector levers	**P85-844**
48	**BEARING,** thrust, for shaft Ref. 46	**P85-568**
49	**BEARING,**for shaft Ref. 46	**P85-569**
50	**BUSHING,** oil impregnated, for gear Ref. D	**P85-267**
51	**STUD COMPLETE,** includes pin, for mounting gear Ref. D to top plate	**P85-799**
52	**WASHER,** lock, for above	**P85-105**
53	**FITTING,** grease, for selector and hand-throw levers	**P85-378**
54	**PIPE PLUG**	**P85-131**

Selector-Lever and Hand-Throw Parts

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
55	**PIN,** for fastening bevel gear Ref. 56 to shaft Ref. 46	**P85-165**
56	**GEAR,** bevel, 30 tooth	**P85-334**
57	**BOLT** and nut, for fastening bearing bracket to plate Ref. 35	**P85-547**
57A	**WASHER,** lock, for above	**P85-109**
58	**FITTING,** grease, for bearing Ref. 59	**P85-140**
59	**BEARING,** for shaft Ref. 45	**P85-845**
60	**SELECTOR LEVER COMPLETE**	**P85-854**
61	**PLATE,** letter "R"	**P85-371**
61A	**PLATE,** letter "N"	**P85-371**
62	**BOLT** and nut, for fastening letters to levers	**P85-114**
62A	**WASHER,** lock, for above	**P81-122**
63	**LEVER,** hand-throw	**P85-793**
64	**EXTENSION,** for lever Ref. 63	**P85-792**



Frames for switch machines.

Frames for Switch Machines

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**FRAME COMPLETE,** main bed, includes oil tube and grease fitting, bushings for clutch and intermediate gear shafts, wear plates, nipple for wire inlet, plate and mounting screws for wire duct. For Models 5A, 5E and 5G switch machines using box-style bearing and wear plates, Refs. F, G and H.	**P85-901**
A1	As above, except for Model 5A machines using gibs, clips and wear plates, Refs. 8, 9 and 10	**P85-902**
A2	Same as Ref. A, except for Models 5F and 5H switch machines using box-style bearing and wear plates Refs. F, G and H	**P85-903**
B	**FRAME COMPLETE,** gear, includes screws and washers for mounting motor, eyebolts with nuts for cover, grease fittings for throw bar and dowel screws for mounting to main bed frame. For Models 5A, 5E and 5G switch machines, using box-style bearing Ref. F	**P85-893**
B1	As above, except for machines using gibs and clips Refs. 8 and 9	**P85-891**
C	**FRAME COMPLETE,** gear, includes screws and washers for mounting motor, eyebolts with nuts for cover, grease fittings for throw bar and dowel screws for mounting to main bed frame. For Models 5F and 5H switch machines using box-style bearing Ref. F	**P85-894**
D	**FRAME COMPLETE,**contact, includes studs for lock and point-detector rod guards, eyebolts with nuts for cover and dowel screws for mounting to main bed frame. For Model 5A switch machines, using box-style wear plates Refs. G and H	**P85-888**
D1	As above, except for machines using wear plates Ref. 10	**P85-885**
D2	Same as Ref. D, except for Models 5E and 5F switch machines using box-style wear plates Refs. G and H	**P85-886**
E	**FRAME COMPLETE,** contact, includes studs for lock and point-detector guards, eyebolts with nuts for cover, and dowel screws for mounting to main bed frame. For Models 5G and 5H switch machines using box-style wear plate Refs. G and H	**P85-889**
E1	As above, except for machines using wear plate Ref. 10	**P85-887**
F	**BEARING COMPLETE,** with screws and washers, for throw bar, one required for each side of machine	**P85-344**
G	**PLATE,** wear, for each lock rod, one required for each side of machine	**P85-864**
H	**PLATE,** wear, for all detector rod combinations, one required for each side of machine	**P85-865**
1	**BUSHING,** for intermediate gear shaft	**P85-268**
2	**TUBE COMPLETE,** with bushing for clutch shaft	**P85-302**
2A	**FITTING,** grease, for above	**P85-377**
3	**PLUG,** pipe, 1/2"	**P85-126**
4	**SCREW,** for mounting Ref. 2	**P85-525**
4A	**WASHER,** lock, for above	**P81-121**
5	**PLATE,** for covering wire duct	**P85-720**
5A	**SCREW,** for above	**P85-534**

Frames for Switch Machines
Parts List

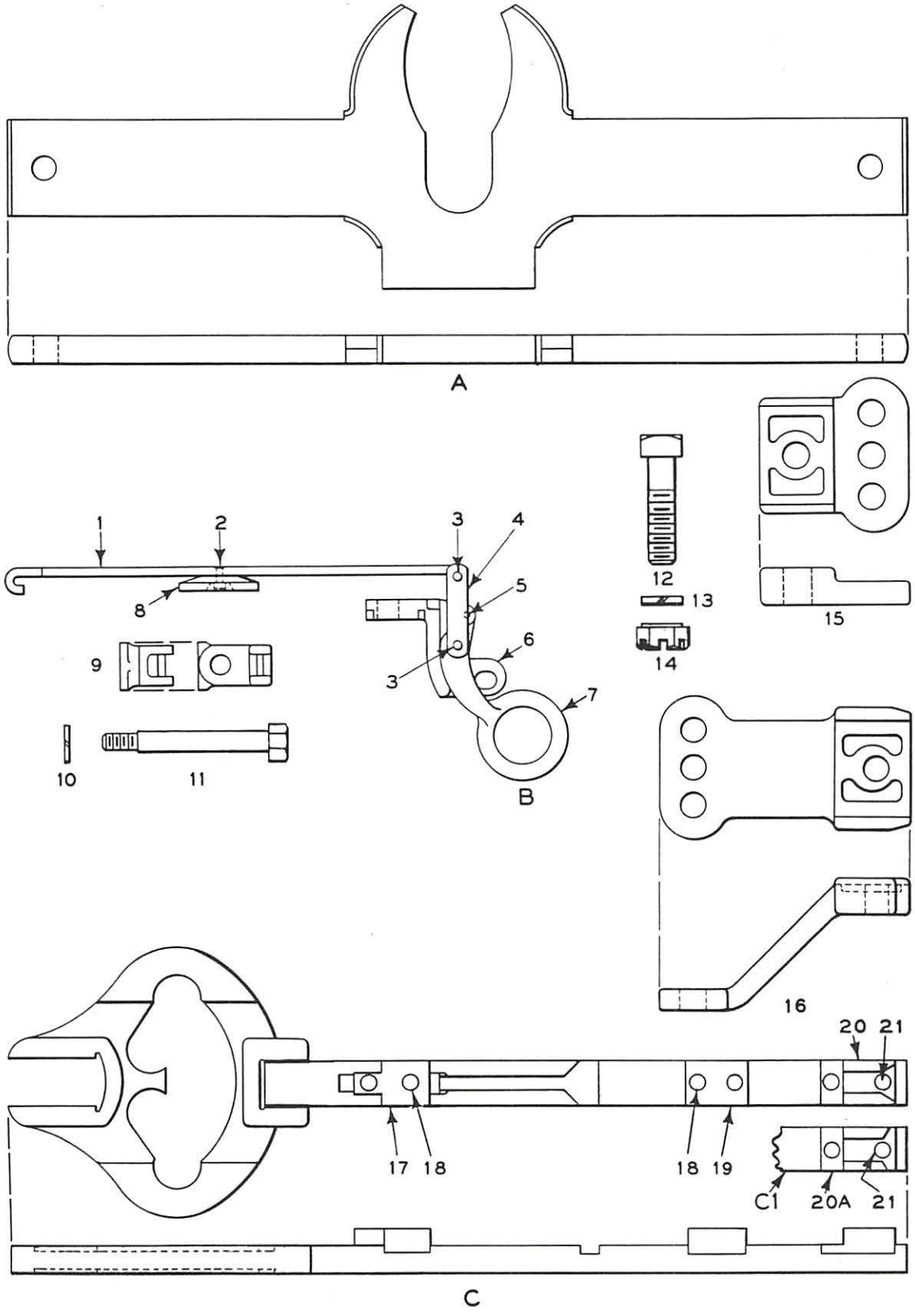
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
6	**NIPPLE,** for wire inlet	**P85-287**
7	**STUD,** for mounting motor, for use at bottom	**P85-566**
7A	**NUT,** for above	**P85-204**
7B	**WASHER,** lock , for above	**P50-101**
8	**GIB,** for throw bar	**P85-286**
9	**CLIP,** for gib Ref. 8	**P85-810**
10	**PLATE,** wear, for use under lock rod, Dim. "Y" = 1-1/2"	**P85-862**
10A	As above, except for use under detector rod, Dim. "Y" = 1-1/4"	**P85-863**
11	**SCREW,** for fastening motor to frame, for use at top	**P85-241**
11A	**WASHER,** lock, for above	**P50-101**
12	**EYEBOLT,** for fastening cover to gear frame	**P85-434**
12A	**NUT,** for above	**P85-413**
13	**FITTING,** grease, for throw bar	**P85-380**
14	**SCREW,** dowel, for fastening motor end of gear frame to main bed frame	**P85-252**
15	**WASHER,** lock, for screws Refs. 14, 17 and 21	**P85-109**
16	**NUT,** for screws Refs. 14, 17 and 21	**P30-133**
17	**SCREW,** dowel, for fastening throw-bar end of gear frame to main bed frame	**P85-251**
18	**SCREW,** dowel, for fastening throw-bar end of contact frame and hasp brackets to main bed frame	**P85-254**
19	**WASHER,** lock, for screw Ref. 18	**P85-108**
20	**STUD,** for lock rod and point-detector rod guards	**P85-150**
21	**SCREW,** dowel, for fastening contact frame to main bed frame	**P85-253**
22	**EYEBOLT,** for fastening cover to contact frame	**P85-435**
22A	**NUT,** for above	**P85-413**
23	**SCREW,** for filler block	**P62-214**
23A	**WASHER,** lock, for above	**P65-456**
24	**BLOCK,** filler	**P85-725**
25	**CLIP,** for wires	**P85-417**
25A	**SCREW,** for above	**P65-200**
26	**FITTING,** grease, for throw bar	**P85-385**
27	**CLIP,** for wires	**P85-416**
27A	**SCREW,** for above	**P65-200**

Frames for Switch machines
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
27B	**WASHER,** lock, for above	**P65-168**
28	**BOLT,** for fastening throw bar bearing Ref. F to frame	**P85-119**
29	**SCREW,** for fastening lock rod wear plate Ref. G and detector wear plate Ref. H to frame	**P50-131**
29A	**WASHER,** lock, for above	**P81-121**



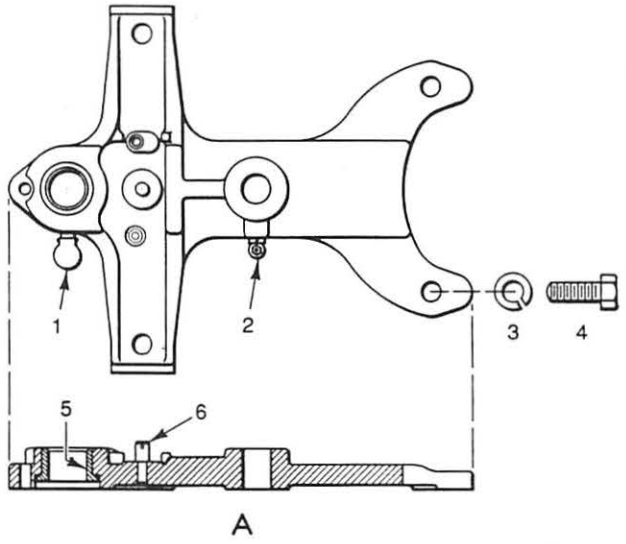
Detail parts for switch machines.

Detail Parts for Switch machines

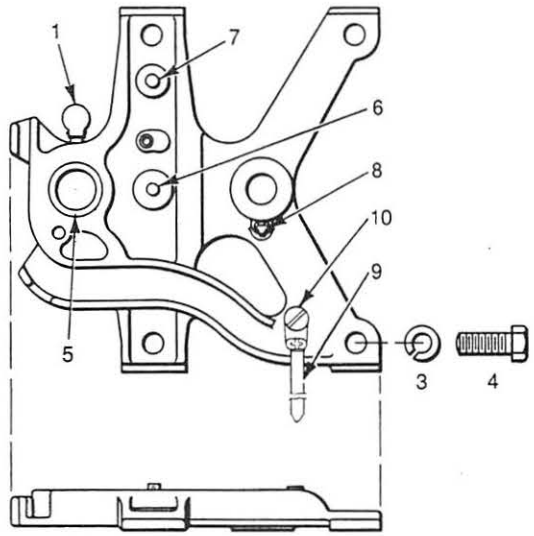
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**THROW BAR,** for all switch machines	**P85-513**
B	**HASP COMPLETE,** for covers	**P85-758**
C	**CAM BAR COMPLETE,** for Model 5A switch machines	**P85-465**
C1	As above, except for Models 5E, 5F, 5G and 5H switch machines	**P85-467**
1	**STRAP,** for hasp	**P85-361**
2	**RIVET,** for fastening disc to strap	**P85-309**
3	**PIN,** for link	**P85-444**
4	**LINK,** for hasp	**P85-189**
5	**PIN,** for bracket	**P85-342**
6	**BRACKET,** for hasp	**P85-710**
7	**HASP,** only	**P85-711**
8	**DISC,** for strap	**P85-724**
9	**BRACKET,** for hasp	**P85-759**
10	**WASHER,** lock, for screw Ref. 11	**P85-108**
11	**SCREW,** dowel, for fastening throw bar end of contact frame and hasp bracket to main bed frame	**P85-254**
12	**BOLT,** for fastening coupling to throw bar	**P85-424**
13	**WASHER,** lock, for bolt Ref. 12	**P85-117**
14	**NUT,** hex, for bolt Ref. 12	**P85-552**
14A	**PIN,** cotter, for above	**P85-107**
15	**COUPLING,** for throw bar	**P85-709**
16	**COUPLING,** offset, for throw bar	**P85-925**
17	**DOG,** lock, for cam bar	**P85-531**
18	**RIVET,** for fastening dogs Refs. 17 and 19 to cam bar	**P85-329**
19	**DOG,** lock, for cam bars	**P85-530**
20	**DOG,** lock, for cam bars Ref. C	**P85-532**
20A	As above, except for cam bar Ref. C1	**P85-533**
21	**RIVET,** for fastening dog Ref. 20 to cam bar	**P85-121**



A



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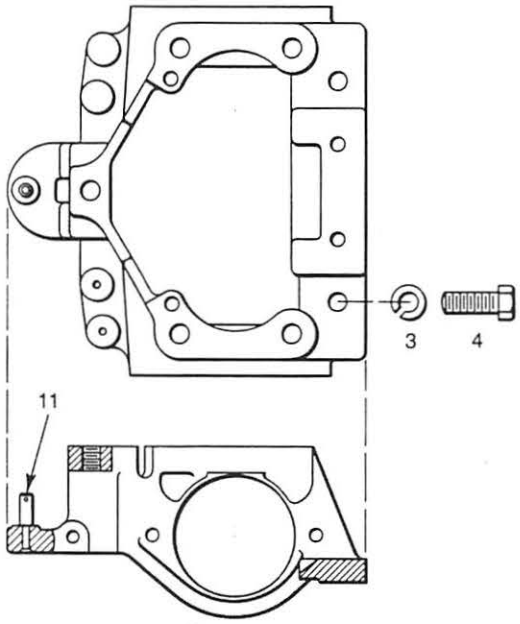

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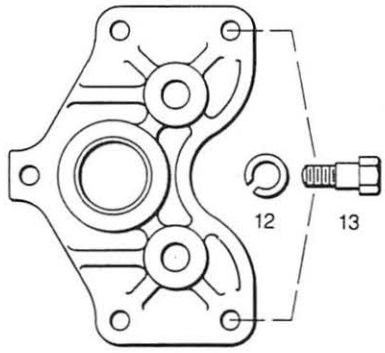
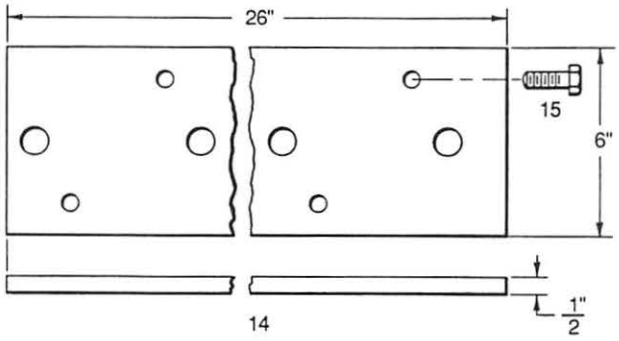
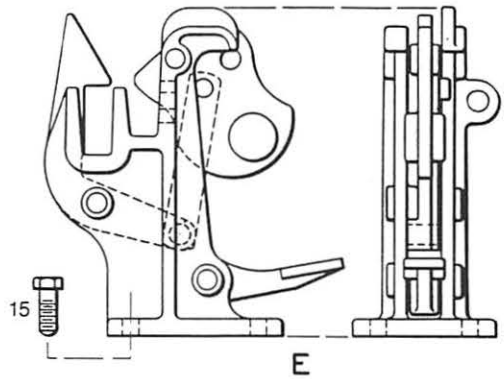


D





E

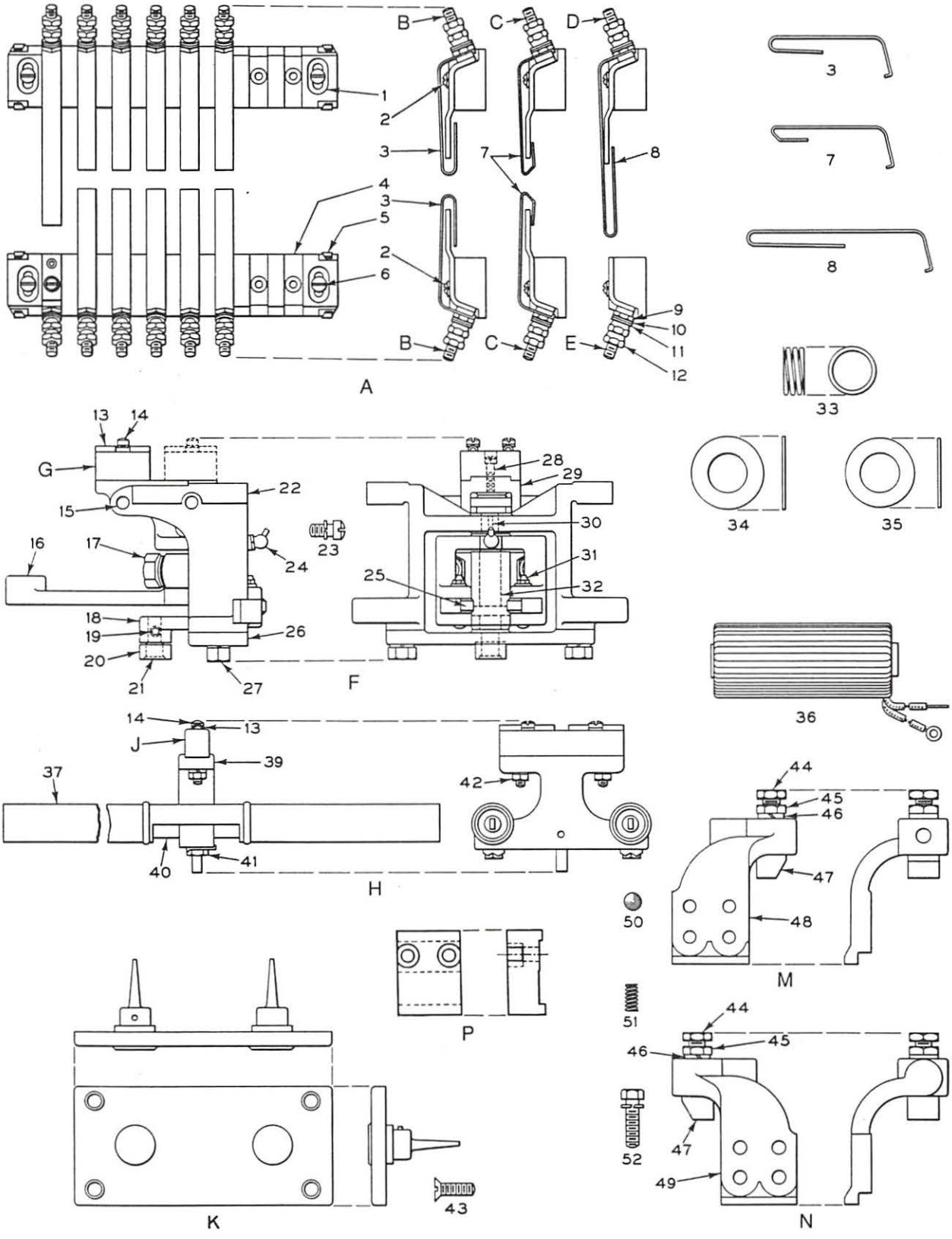
Detail parts for switch machines.

Detail Parts for Switch machines

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**BRACKET COMPLETE,** upper bearing for clutch and gear with main pinion. Includes grease fittings, oil cup, bushing for clutch shaft and stud for cut-out switch	**P85-701**
B	**GEAR BRACKET COMPLETE,** for intermediate gear and clutch. Includes studs for cut-out switch, bushing for clutch, oil cup, grease fitting and wire clip	**P85-702**
C	**BEARING BRACKET COMPLETE,** for main gear, selector clutch and clutch operating mechanism. Includes stud for motor cut-out switch.	**P85-858**
D	**PLATE,** top, for use on bracket Ref. C	**P85-823**
E	**LOCK STAND,** for selector and hand-throw levers	**P85-794**
1	**FITTING,** oiler, for brackets Refs. A and B	**P85-384**
1A	**FITTING,** oiler, for machines with frequent operations	**P85-74**
2	**FITTING,** grease	**P85-379**
3	**WASHER,** lock, for Ref. 4	**P85-109**
4	**SCREW,** for fastening brackets Refs. A, B and C to gear frame	**P87-108**
5	**BUSHING,** for brackets Ref. A and B	**P85-279**
6	**STUD,** for brackets Refs. A and B	**P85-147**
7	**STUD,** for gear bracket	**P85-151**
8	**FITTING,** grease, for intermediate gear shaft	**P85-378**
9	**CABLE TIE,** for wires	**P85-1069**
10	**SCREW,** for clip	**P71-115**
11	**STUD,** for bearing bracket	**P85-154**
12	**WASHER,** lock, for Ref. 13	**P85-108**
13	**SCREW,** for fastening top plate to bearing bracket	**P85-255**
14	**PLATE,** for lock stands	**P85-719**
15	**SCREW,** for fastening lock stand to plate	**P50-403**
15A	**WASHER,** lock, for above	**P85-802**



Pole-changer contacts and movements.

Pole-Changer Contacts and Movements
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**POLE-CHANGER CONTACT GROUP COMPLETE,** includes four motor-control contacts and two coil-control contacts. For model 5A 110-volt, high-speed switch machines	**P85-739**
B	**CONTACT COMPLETE,** includes stop, contact and base nut	**P85-743**
C	**CONTACT COMPLETE,** includes stop, contact and base nut	**P85-744**
D	**CONTACT COMPLETE,** includes stop, contact and base nut	**P85-745**
E	**POST COMPLETE,** includes stop	**P85-753**
F	**MOVEMENT COMPLETE,** for pole-changer, includes grease fittings	**P85-760**
*G	**CONTACT BLOCK COMPLETE**	**P85-658**
H	**PLUNGER COMPLETE,** for pole-changer	**P85-602**
J	**CONTACT BLOCK COMPLETE**	**P85-819**
K	**PLATE COMPLETE,** for pole-changer	**P85-603**
M	**ARM COMPLETE,** right-hand, for operating pole-changer on Model 5A switch machines	**P85-604**
N	**ARM COMPLETE,** left-hand, for operating pole-changer on Model 5A switch machines	**P85-605**
P	**ARM,** only for Models 5E, 5F, 5G and 5H switch machines	**P85-717**
1	**WASHER,** for screw Ref. 6	**P85-178**
2	**SCREW,** for mounting contacts	**P65-206**
2A	**WASHER,** lock, for above	**P85-390**
3	**CONTACT SPRING,** for Ref. B	**P85-575**
4	**BLOCK,** insulation	**P85-529**
5	**WASHER,** for block	**P85-559**
6	**SCREW,** for mounting insulation blocks	**P85-248**
7	**CONTACT SPRING,** for Ref. C	**P85-576**
8	**CONTACT SPRING,** for Ref. D	**P85-577**
9	**NUT,** base, for terminal posts	**P62-333**
10	**WASHER,** lock, for terminal posts	**P62-402**
11	**WASHER,** for terminal posts	**P76-108**
12	**NUT,** for terminal posts	**P76-131**
13	**CONTACT,** only, for blocks Refs. G and J	**P85-376**
14	**SCREW,** for mounting contact	**P85-870**
14A	**WASHER,** lock, for above	**P62-334**
15	**PIN,** for yoke	**P85-145**

* Some older machines may require two blocks Ref. G.

Pole-Changers Contacts and Movements
Parts List

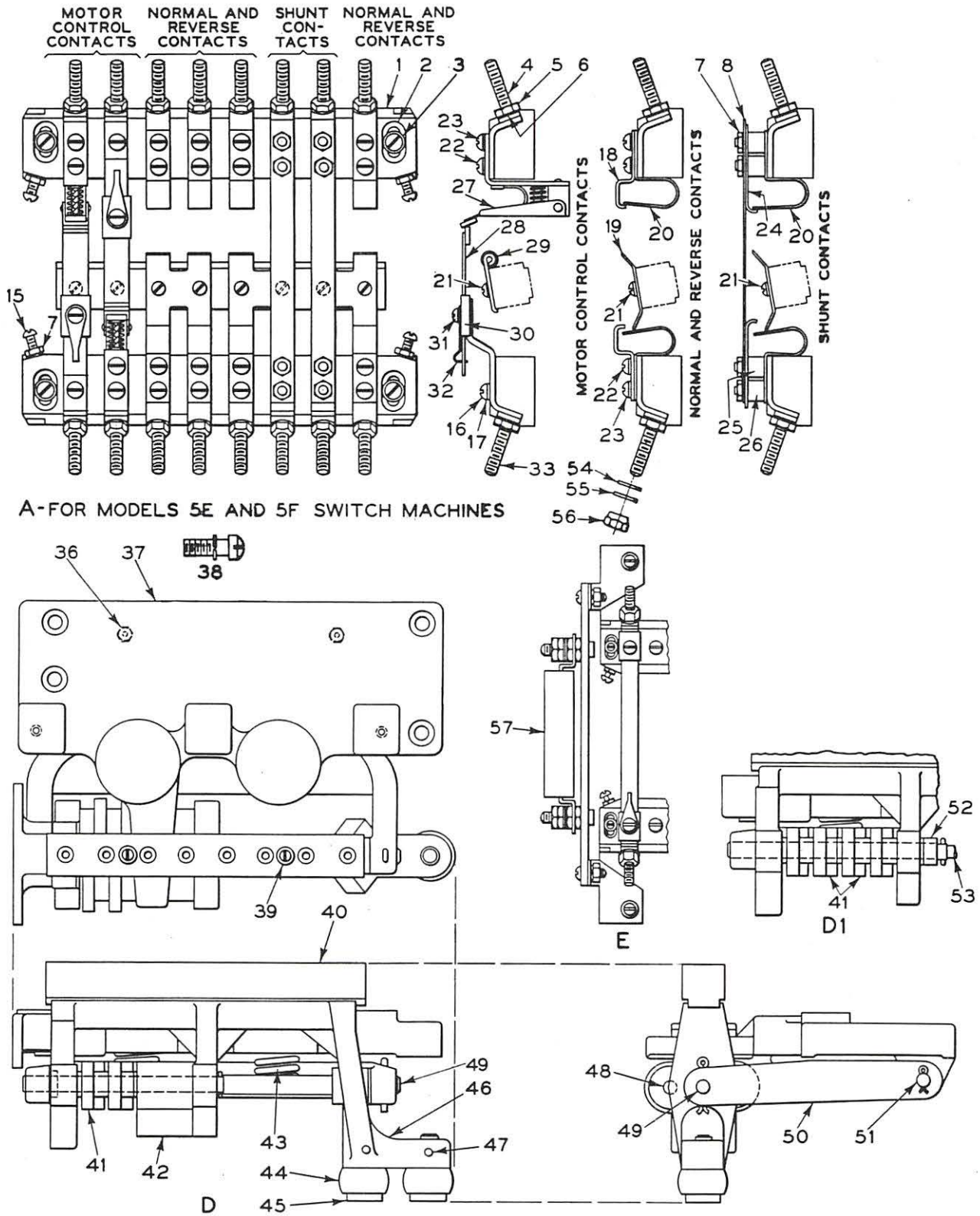
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
16	**ARM COMPLETE**	**P85-593**
17	**BOLT,** for arm Ref. 16	**P85-718**
17A	**NUT,** for above	**P85-262**
17B	**WASHER,** shim, for above .015" thick	**P85-386**
17C	**WASHER,** shim, for above .021" thick	**P85-387**
18	**ARM COMPLETE**	**P85-594**
19	**PIN,** for stud Ref. 21	**P85-301**
20	**ROLLER**	**P85-372**
21	**STUD,** for roller	**P85-352**
22	**YOKE,** for contacts	**P85-712**
23	**SCREW,** for mounting movement	**P85-439**
23A	**WASHER,** lock, for above	**P76-106**
24	**FITTING,** grease, angle	**P87-101**
25	**ROLLER,** for arm Ref. 18	**P85-277**
25A	**STUD,** for above	**P85-146**
26	**BEARING**	**P85-714**
27	**SCREW,** for bearing	**P50-402**
27A	**WASHER,** lock, for above	**P76-106**
28	**SCREW,** for mounting contact block	**P65-231**
29	**BASE,** for contact block	**P85-589**
30	**KEY,** for shaft	**P85-463**
31	**FITTING,** grease	**P85-381**
32	**SHAFT COMPLETE**	**P85-703**
33	**SPRING,** for pole-changer coils	**P85-194**
34	**WASHER,** steel, for pole-changer coils	**P85-184**
35	**WASHER,** fibre, with 1" dia. hole, for pole-changer coils	**P85-160**
35A	As above, except with 1-3/32" dia. hole	**P85-1354**
36	**COIL,** for pole-changer, for 110-volt dc. high-speed switch machines	**P85-339**
37	**TUBE,** for plunger	**P85-528**
39	**YOKE,** for plunger	**P85-574**
40	**PLUNGER,** only	**P85-601**
41	**SCREW,** for plunger	**P50-236**

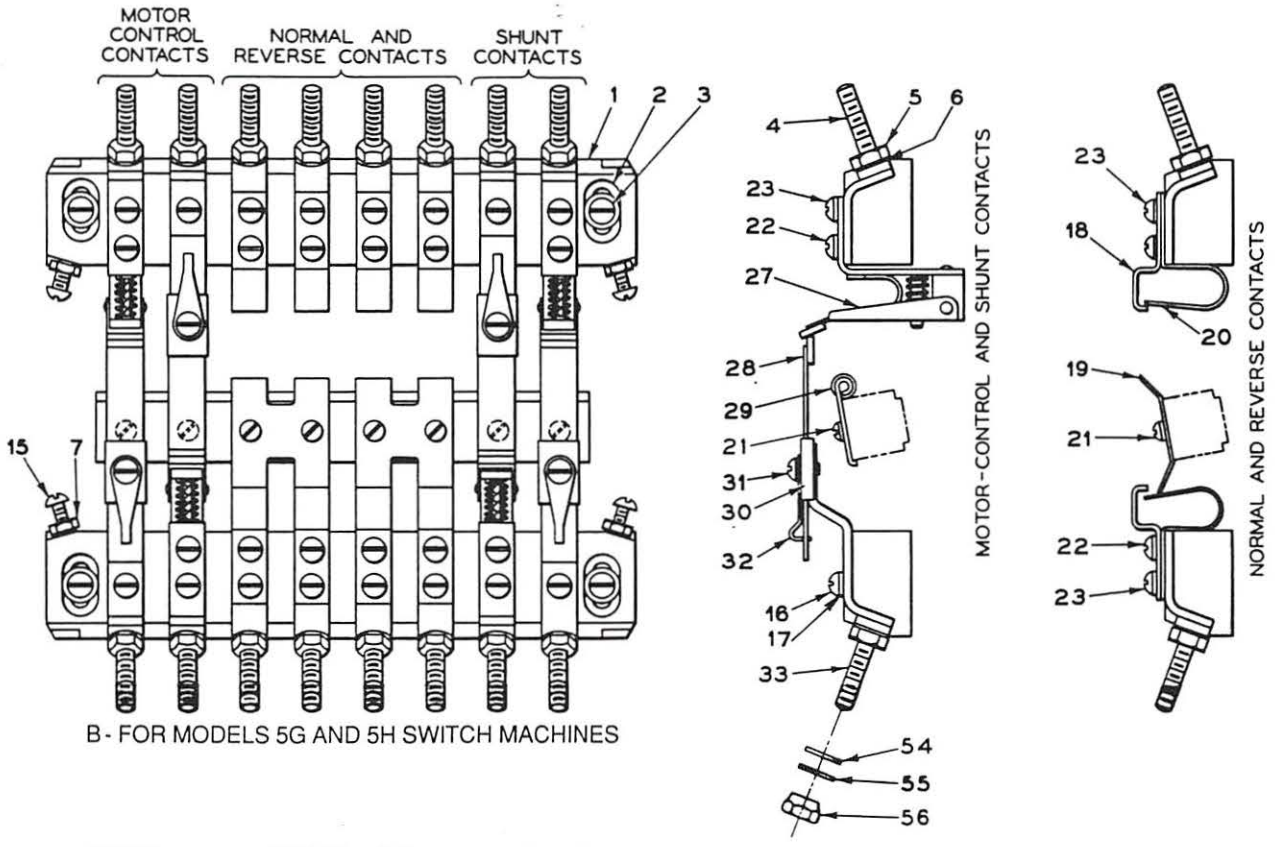
Pole-Changer Contacts and Movements
Parts List

Order by catalog number and name shown in bold type

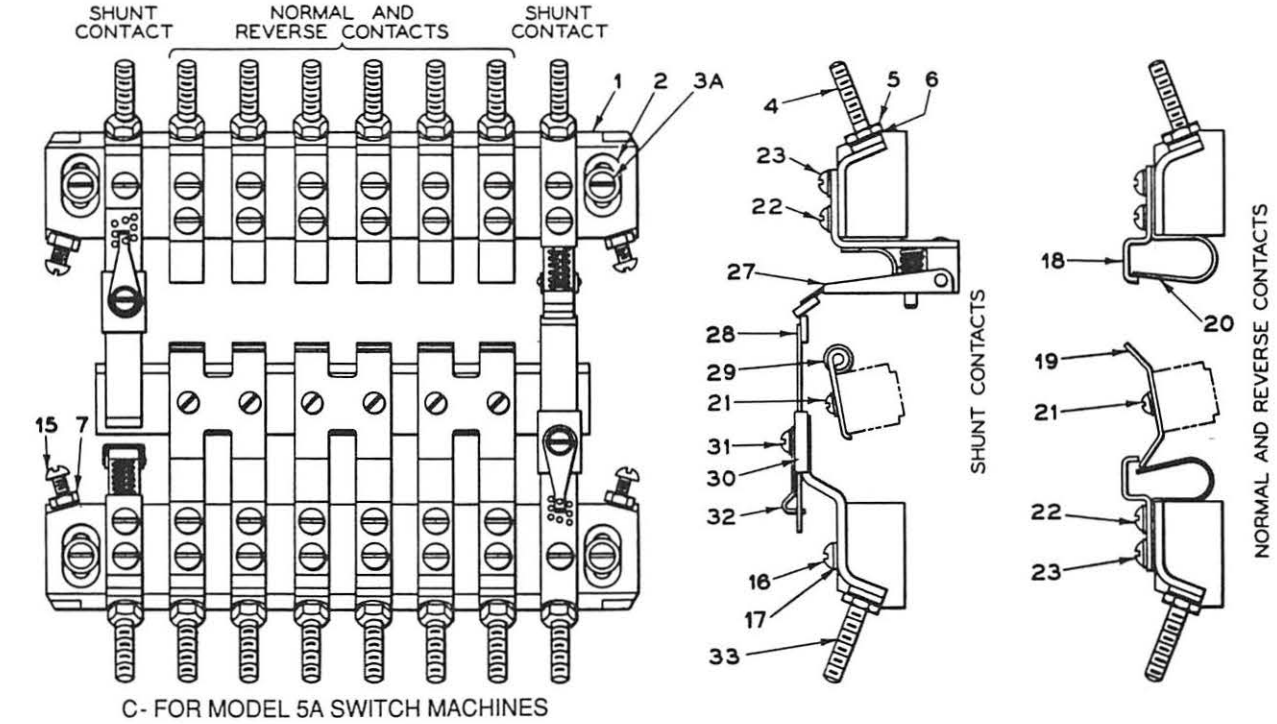
REF.	NAME	CATALOG NUMBER
41A	**WASHER,** lock, for above	**P85-218**
42	**NUT,** for contact block	**P85-427**
42A	**WASHER,** lock, for above	**P65-168**
43	**SCREW,** for mounting plate Ref. K	**P85-311**
44	**SCREW,** for arms	**P85-228**
45	**NUT,** for screw Ref. 44	**P81-203**
46	**WASHER,** lock, for above	**P81-122**
47	**PLUNGER,** for arms	**P85-159**
48	**ARM,** right-hand, for Ref. M	**P85-715**
49	**ARM,** left-hand, for Ref. N	**P85-716**
50	**BALL,** for plunger Ref. 47	**P85-347**
51	**SPRING,** for plunger Ref. 47	**P85-363**
52	**SCREW,** for attaching arms Refs. M, N and P to lock rods	**P85-129**
52A	**WASHER,** lock, for above	**P76-106**



Point-detector contacts and movements.

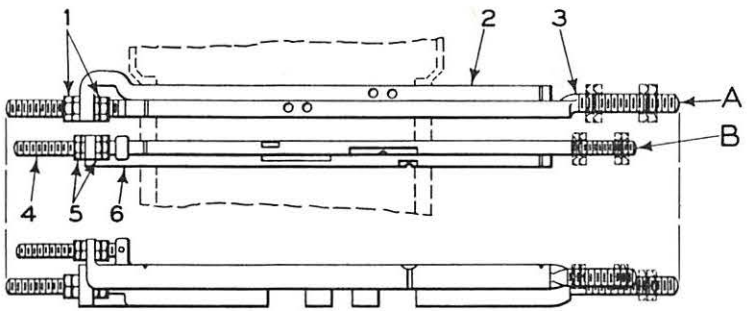


B - FOR MODELS 5G AND 5H SWITCH MACHINES

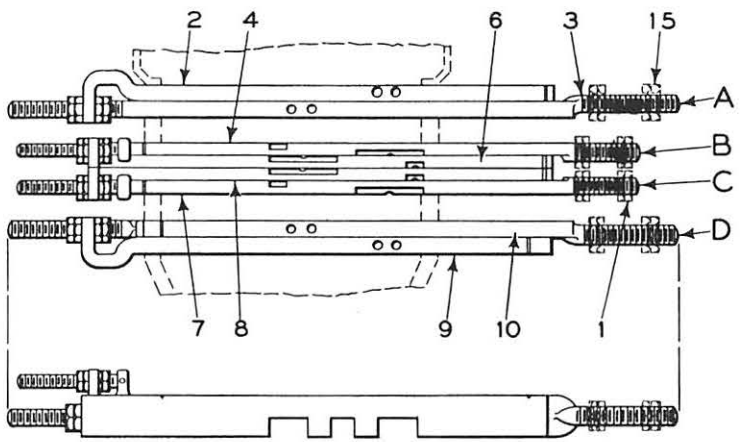


C - FOR MODEL 5A SWITCH MACHINES

Point-detector contacts and movements.

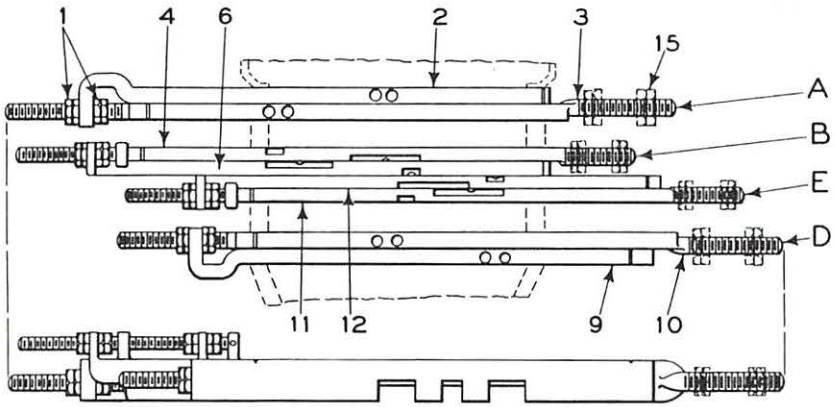


FOR SINGLE SWITCH, SINGLE SLIP SWITCH, DERAIL, OR DOUBLE SLIP SWITCH WITH MACHINE HAVING ONE LOCK AND ONE POINT-DETECTOR ROD

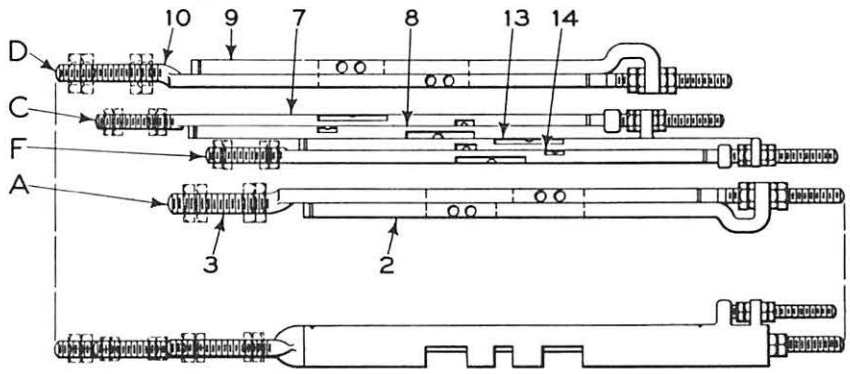


FOR DOUBLE SLIP SWITCH WITH MACHINE HAVING TWO LOCK RODS AND TWO POINT-DETECTOR RODS

FOR LUGS SEE PAGE 60

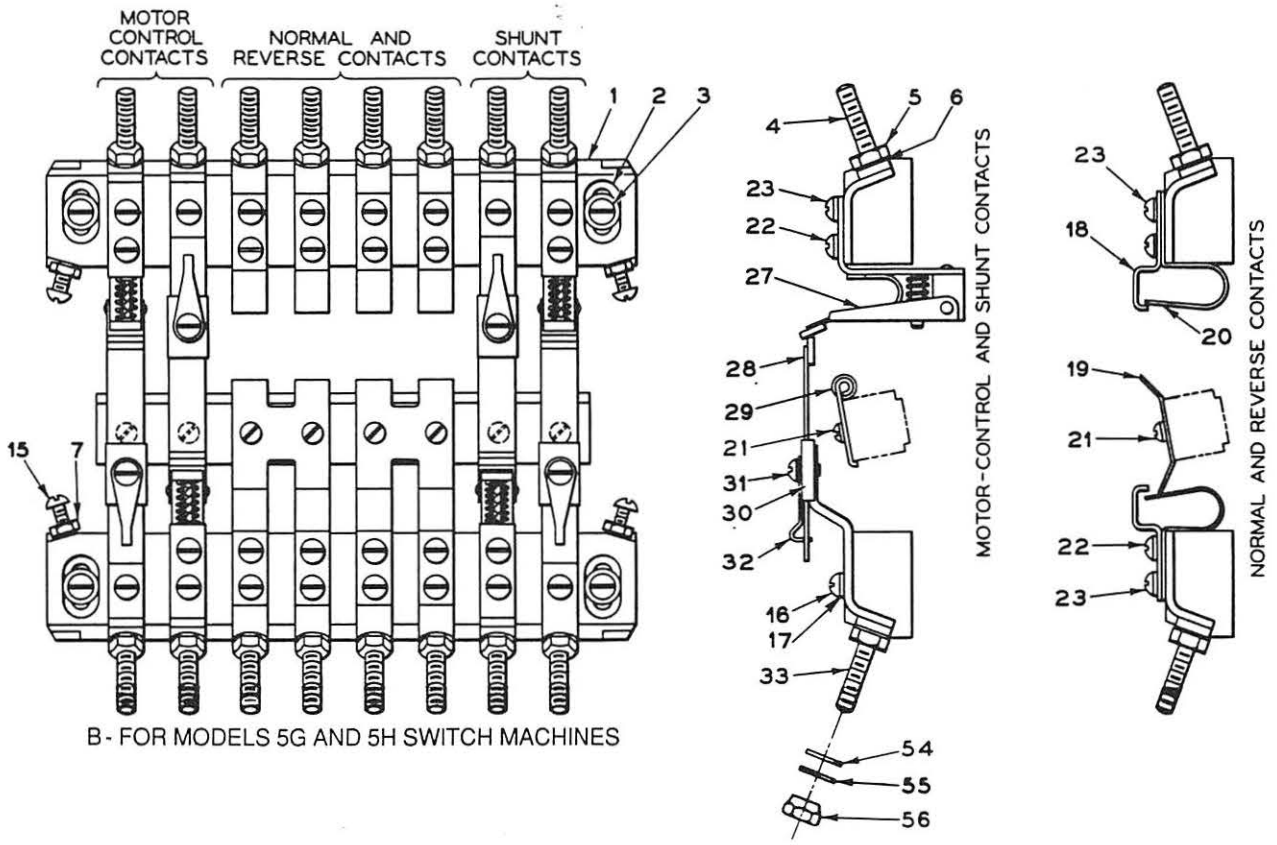


FOR MOVABLE POINT FROG-LEFT-HAND

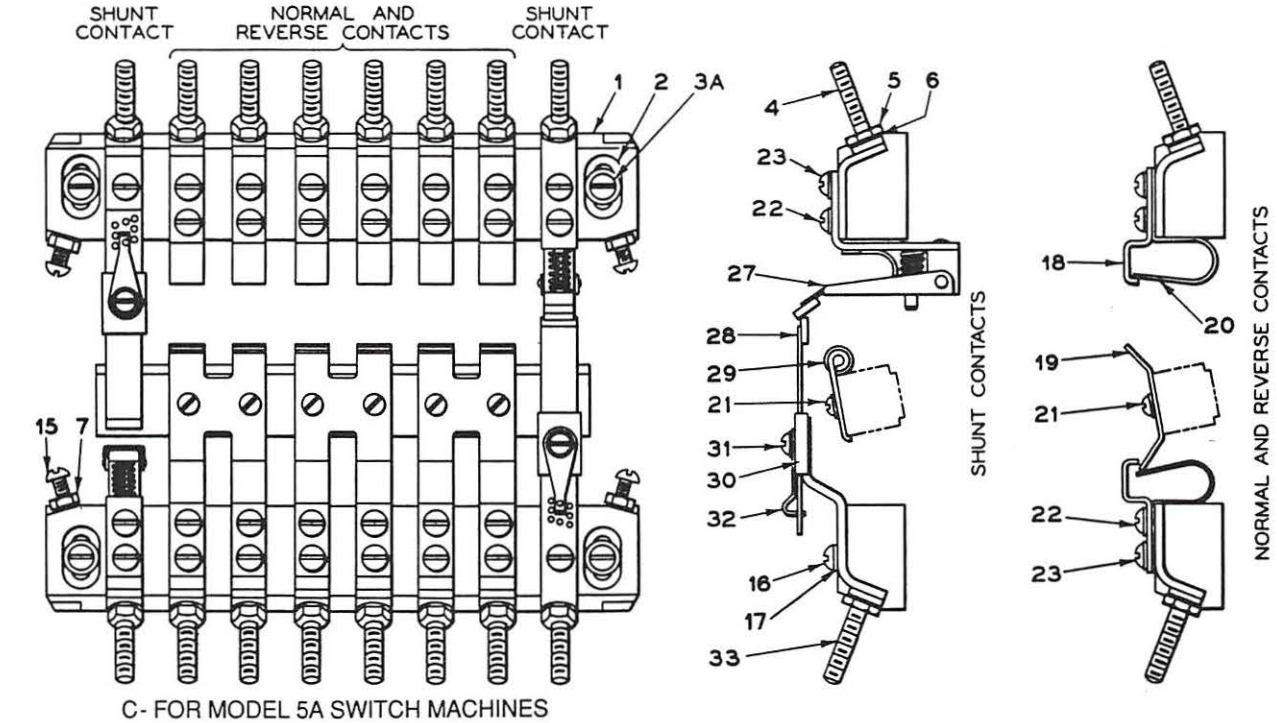


FOR MOVABLE POINT FROG-RIGHT-HAND

Lock rods and point-detector rods.



B- FOR MODELS 5G AND 5H SWITCH MACHINES



C- FOR MODEL 5A SWITCH MACHINES

Point-detector contacts and movements.

Point-Detectors and Movements
Parts List

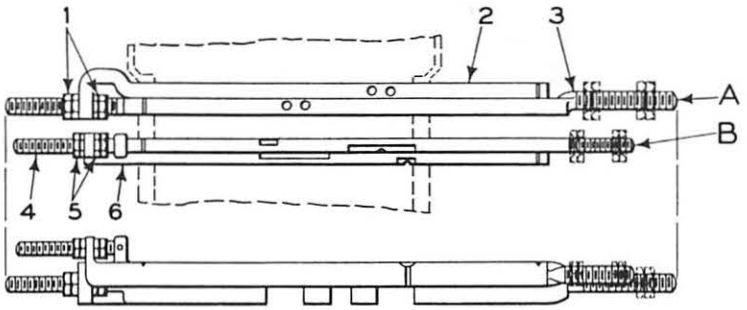
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**POINT-DETECTOR CONTACT GROUP COMPLETE,** having three normal; three reverse; two motor-control contacts and two shunt strips, for Model 5E and 5F switch machines	**P85-979**
B	**POINT-DETECTOR CONTACT GROUP COMPLETE,** having two normal; two reverse; two shunt contacts and two motor-control contacts, for Model 5G and 5H switch machines	**P85-740**
C	**POINT-DETECTOR CONTACT GROUP COMPLETE,** having three normal; three reverse; and two shunt contacts, for Model 5A switch machines	**P85-741**
D	**POINT-DETECTOR MOVEMENT COMPLETE,** for all switch machines having one point-detector rod	**P85-761**
D1	As above, except for switch machines having two point-detector rods	**P85-762**
E	**HEATER COMPLETE,** 15 watts, 110 volts	**P85-927**
1	**BLOCK,** insulation, for contacts	**P85-529**
2	**WASHER,** for screw Ref. 3	**P85-178**
3	**SCREW,** 1-1/4" long, for mounting blocks, for Refs. A and B	**P85-248**
3A	As above, except 1" long, for mounting block, for Ref. C	**P85-982**
4	**TERMINAL POST COMPLETE,** includes post and stop only	**P85-753**
5	**NUT,** for terminal posts	**P62-333**
6	**WASHER,** for terminal posts	**P50-157**
7	**NUT,** for insulators and screws Ref. 15	**P76-129**
7A	**WASHER,** lock, for above	**P62-401**
8	**STRIP,** shunt	**P85-322**
15	**SCREW,** for locking screw Ref. 3	**P85-236**
16	**SCREW,** for post Ref. 33	**P65-206**
17	**WASHER,** lock for above	**P85-390**
18	**STOP,** for springs Ref. 20	**P85-391**
19	**FINGER,** only	**P85-755**
20	**SPRING,** only	**P85-752**
21	**SCREW,** for fastening fingers Refs. 17 and 19 also arm Ref. 29 to block	**P65-198**
21A	**WASHER,** lock for above	**P62-402**
22	**SCREW,** for mounting stops Ref. 18	**P85-238**
22A	**WASHER,** lock, for above	**P62-401**
23	**SCREW,** for mounting terminal posts	**P50-253**
23A	**WASHER,** lock for above	**P85-390**
24	**STOP,** for springs Ref. 20	**P85-392**
25	**INSULATOR,** with short screw	**P65-557**
26	**INSULATOR,** with long screw	**P65-559**

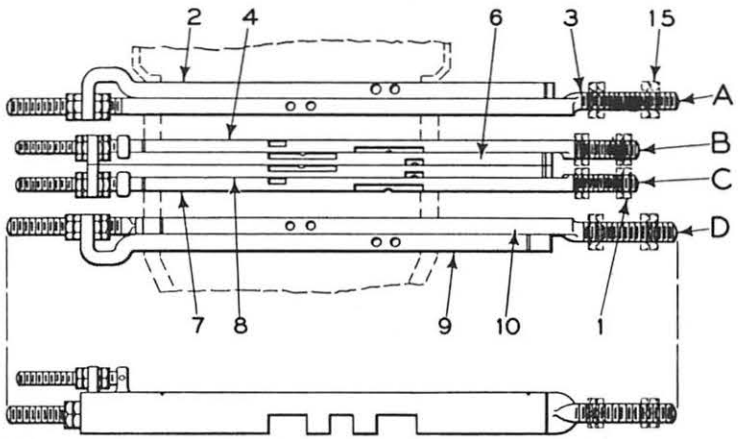
Point-Detectors and Movements
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
27	**FINGER COMPLETE**	**P85-747**
28	**FINGER COMPLETE**	**P85-748**
29	**ARM COMPLETE**	**P85-869**
30	**WASHER,** for adjuster Ref. 32	**P85-217**
31	**SCREW,** for fastening finger Ref. 28 and adjuster Ref. 32 to post	**P85-233**
31A	**WASHER,** lock, for above	**P62-402**
32	**ADJUSTER,** for finger Ref. 28	**P85-355**
33	**TERMINAL POST COMPLETE,** includes post and stop only	**P85-754**
36	**FITTING,** grease	**P85-381**
37	**PLATE,** for movement	**P85-713**
38	**SCREW,** for mounting movement	**P85-397**
38A	**WASHER,** lock, for above	**P76-106**
39	**SCREW,** for fastening block to movement	**P62-217**
40	**BLOCK,** insulating, for yoke	**P85-484**
41	**ROLLER,** for movements	**P85-726**
42	**BLOCK,** filler, for use with switch machine having one detector rod	**P85-821**
43	**SPRING,** for movements	**P85-200**
44	**ROLLER,** for operating yoke from cam bar	**P85-919**
45	**STUD,** for rollers	**P85-284**
46	**CONTACT YOKE COMPLETE,** for switch machines having one detector rod	**P85-706**
46A	As above, except for switch machines having two detector rods	**P85-707**
47	**PIN,** for fastening stud to yoke	**P85-327**
48	**PIN,** for roller Ref. 41	**P85-187**
49	**PIN,** for movements	**P85-305**
50	**YOKE,** only	**P85-708**
51	**PIN,** for yoke	**P85-304**
52	**BUSHING,** for pin Ref. 53	**P85-437**
53	**PIN,** for roller	**P85-188**
54	**WASHER,** lock, for terminal posts	**P62-402**
55	**WASHER,** for terminal posts	**P76-108**
56	**NUT,** for terminal posts	**P76-131**
57	**RESISTOR,** only, 15 watts, 110 volts	**P85-929**
58	**MODIFICATION KIT**	**P85-1356**

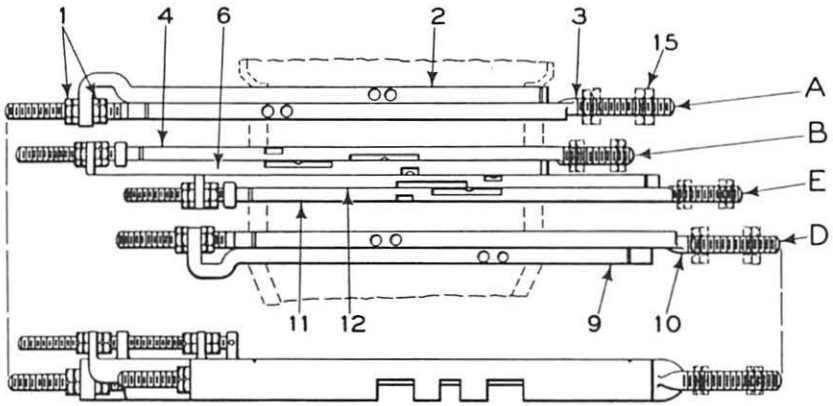


FOR SINGLE SWITCH, SINGLE SLIP SWITCH, DERAIL, OR DOUBLE SLIP SWITCH WITH MACHINE HAVING ONE LOCK AND ONE POINT-DETECTOR ROD

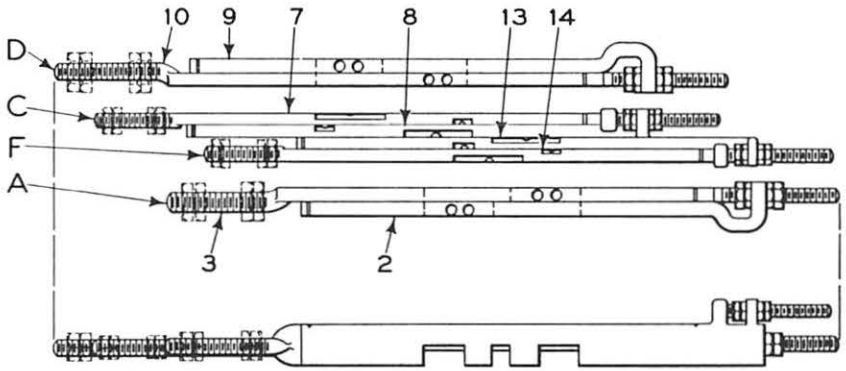


FOR DOUBLE SLIP SWITCH WITH MACHINE HAVING TWO LOCK RODS AND TWO POINT-DETECTOR RODS

FOR LUGS SEE PAGE 60



FOR MOVABLE POINT FROG-LEFT-HAND



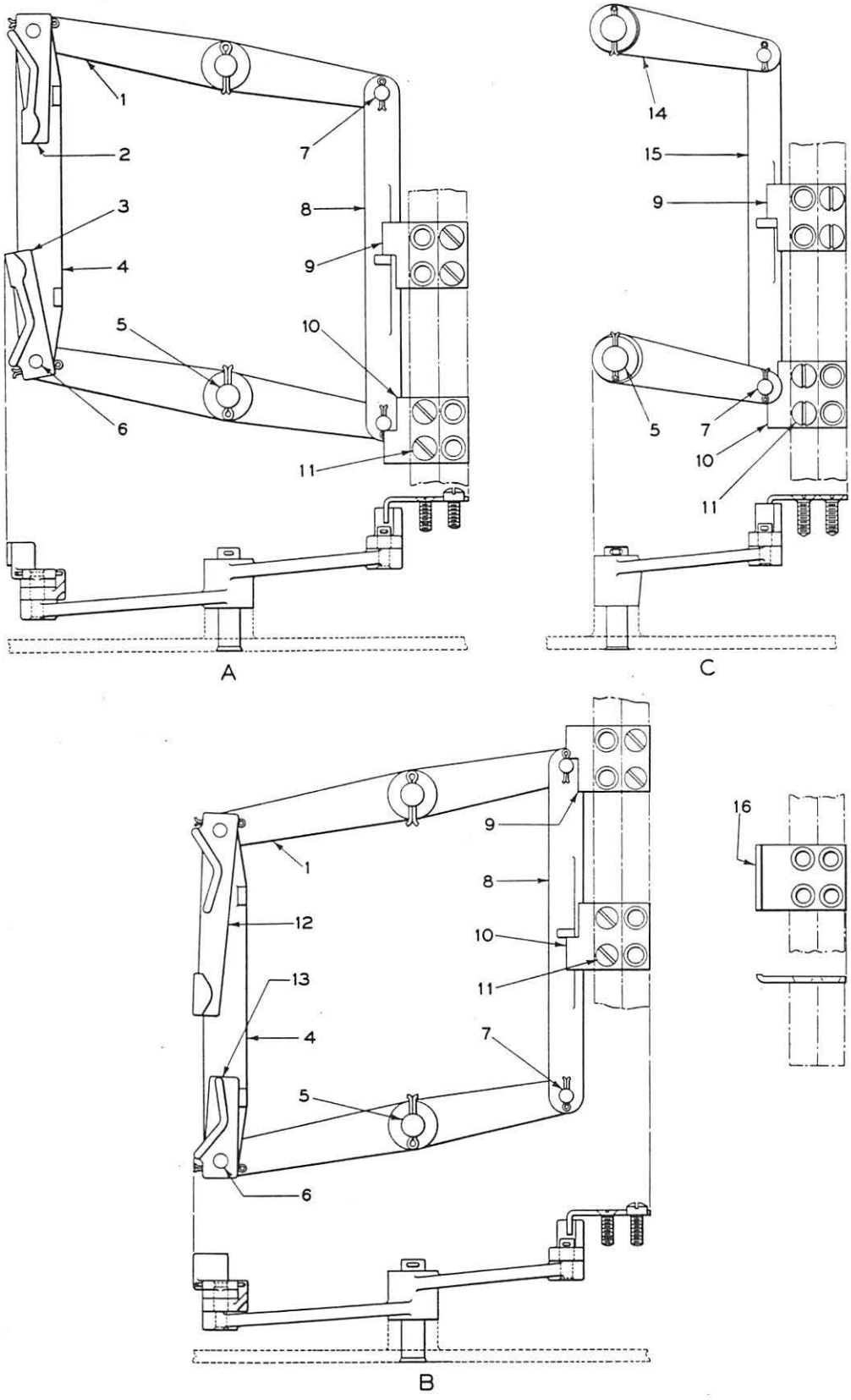
FOR MOVABLE POINT FROG-RIGHT-HAND

Lock Rods and Point-Detectors Rods

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**LOCK ROD COMPLETE,** adjustable	**P85-468**
B	**POINT-DETECTOR ROD COMPLETE**	**P85-764**
C	**POINT-DETECTOR ROD COMPLETE**	**P85-765**
D	**LOCK ROD COMPLETE,** adjustable	**P85-469**
E	**POINT-DETECTOR ROD COMPLETE**	**P85-763**
F	**POINT-DETECTOR ROD COMPLETE**	**P85-766**
1	**NUT,** 3/4", for lock and detector rods	**P85-250**
2	**PLATE,** adjusting, for lock rod Ref. A	**P85-482**
3	**ROD,** only, for lock rod Ref. A	**P85-471**
4	**ROD,** with stud, for detector rod Ref. B	**P85-881**
5	**NUT,** 5/8", for detector rods	**P85-208**
6	**ROD,** adjusting, for detector rod Ref. B	**P85-729**
7	**ROD,** with stud, for detector rod Ref. C	**P85-883**
8	**ROD,** only, for detector rod Ref. C	**P85-730**
9	**PLATE,** adjusting, for lock rod Ref. D	**P85-483**
10	**ROD,** only, for lock rod Ref. D	**P85-470**
11	**ROD,** with stud, for detector rod Ref. E	**P85-882**
12	**ROD,** only, for detector rod Ref. E	**P85-728**
13	**ROD,** only, for detector rod Ref. F	**P85-731**
14	**ROD,** with stud, for detector rod Ref. F	**P85-884**
15	**NUT,** for lug on lock rod	**P91-144**

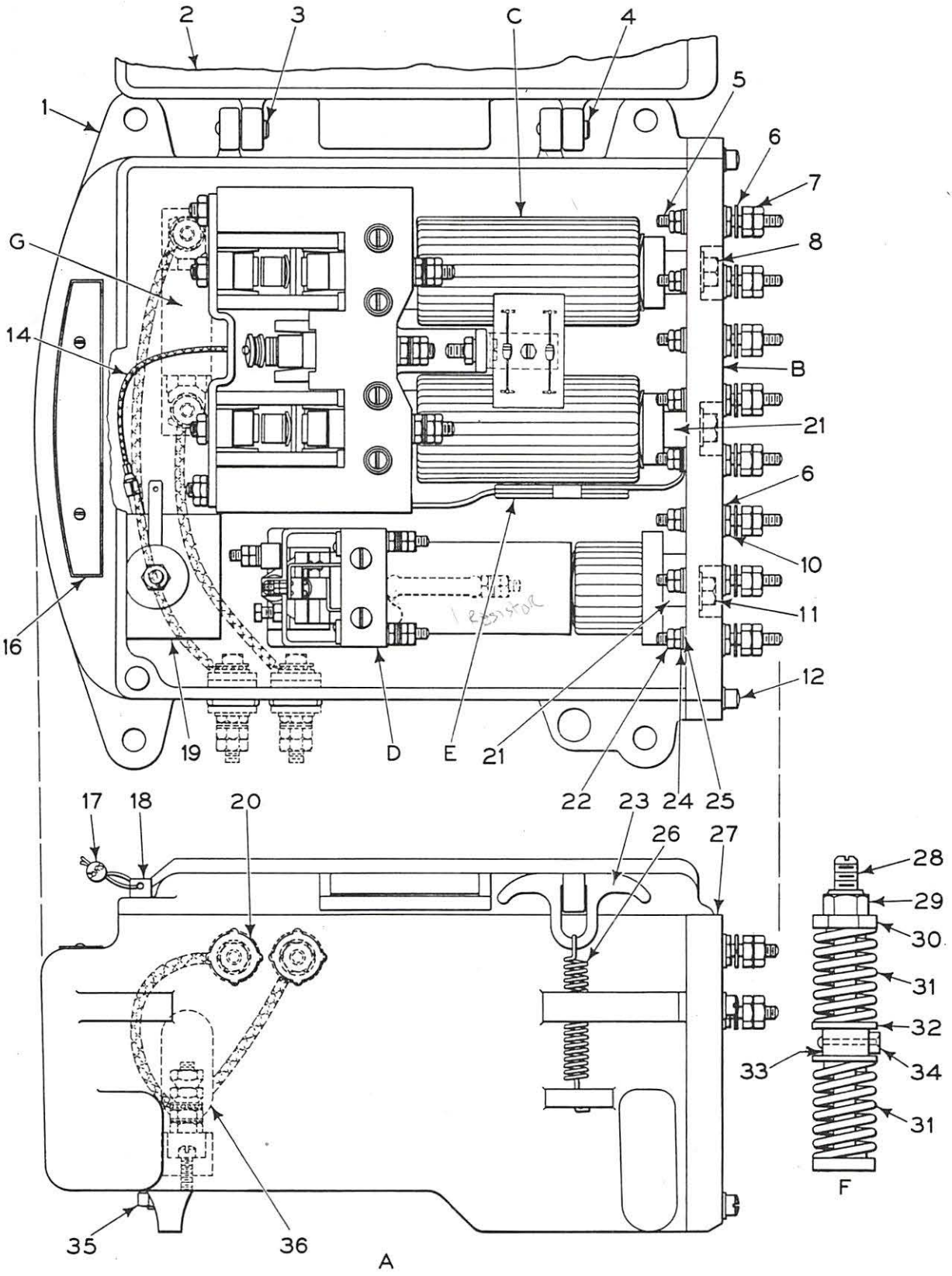


Link Motions.

Link Motions
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**LINK MOTION COMPLETE,** for Model 5A switch machines having two lock rods moving in opposite directions, as for the operation of movable point frogs	**P85-767**
B	**LINK MOTION COMPLETE,** for Model 5A switch machines having two lock rods moving in the same direction, as for the operation of double slip switches	**P85-768**
C	**LINK MOTION COMPLETE,** for detecting movement of second lock rod on movable point frogs of Models 5E, 5F, 5G and 5H switch machines	**P85-769**
1	**LEVER,** for link motions Refs. A and B	**P85-587**
2	**DOG,** right hand, for link motion Ref. A	**P85-722**
3	**DOG,** left hand, for link motion Ref. A	**P85-723**
4	**LINK,**for link motions Refs. A and B	**P85-191**
5	**STUD,** shouldered, for levers Refs. 1 and 14	**P85-149**
6	**STUD,** shouldered, for dogs Refs. 2, 3, 12 and 13	**P85-560**
7	**STUD,** shouldered, for links Refs. 8 and 15	**P85-148**
8	**LINK,** for link motions Refs. A and B	**P85-190**
9	**CLIP,** right hand, for link motions Refs. A, B and C	**P85-734**
10	**CLIP,** left hand, for link motions Refs. A, B and C	**P85-733**
11	**SCREW,** for clips Refs. 9 and 10	**P85-349**
12	**DOG,** right hand, for link motion Ref. B	**P85-923**
13	**DOG,** left hand, for link motion Ref. B	**P85-721**
14	**LEVER,** for link motion Ref. C	**P85-922**
15	**LINK,** for link motion Ref. C	**P85-921**
16	**CLIP,** for detecting movement of second lock rod in double slip switches of Models 5E, 5F, 5G and 5 H switch machines	**P85-735**



Baised-neutral controller.

Biased-Neutral Controller
Parts List

Order by catalog number and name shown in bold type

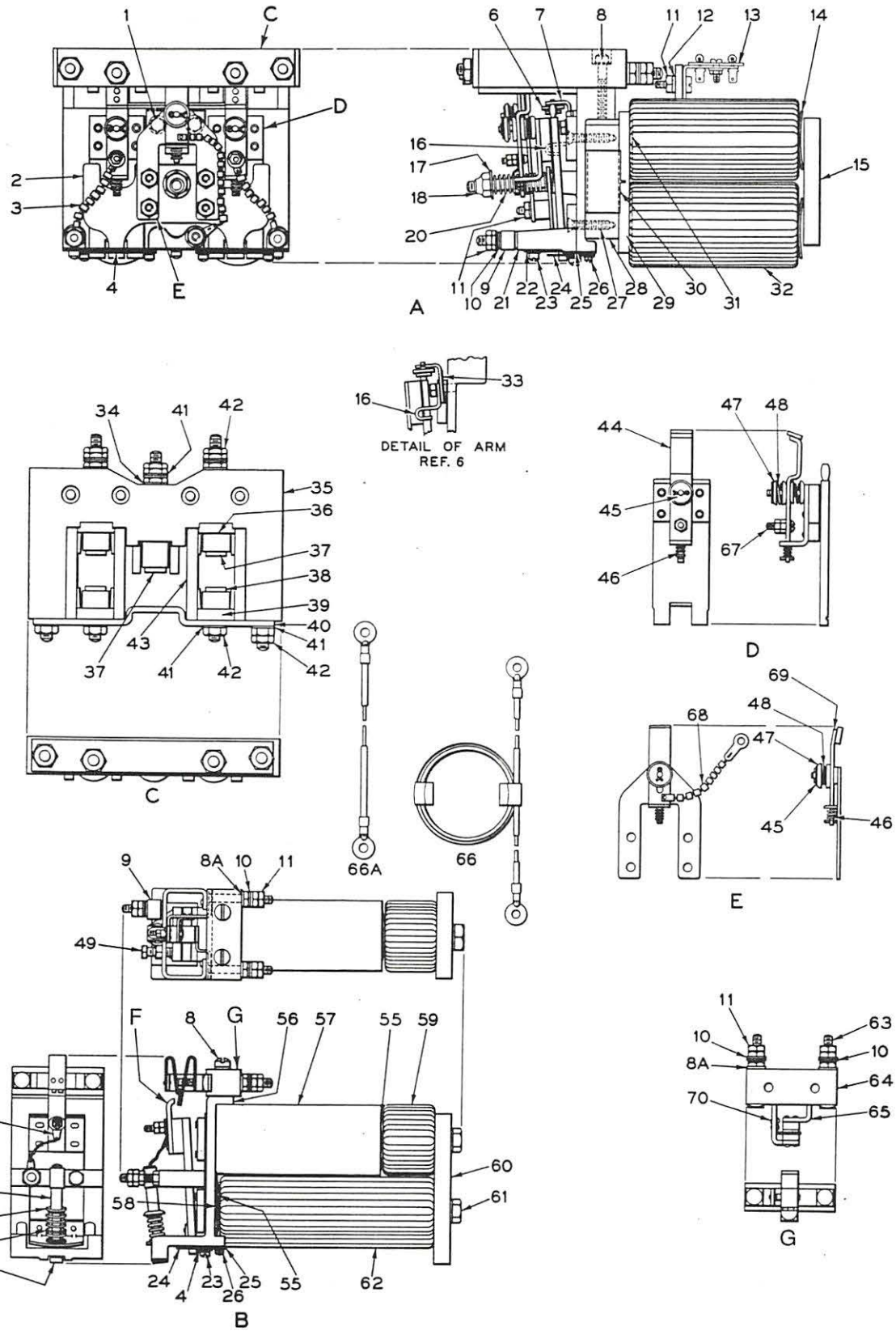
REF.	NAME	CATALOG NUMBER
A	**BIASED-NEUTRAL CONTROLLER COMPLETE,** for 10- or 24-volt control and 110-volt operation	**P85-827**
A1	As above, except with heater	**P85-1381**
A2	Same as Ref. A, except for 10- or 24-volt control and 24-volt operation	**P85-828**
A3	Same as Ref. A2, except with heater	**P85-1382**
B	**RELAY GROUP COMPLETE,** includes contactor, overload relay and terminal board, for Ref. A	**P85-832**
B1	As above, except for Ref. A1	**P85-831**
B2	Same as Ref. B, except for Ref. A2	**P85-834**
B3	Same as Ref. B, except for Ref. A3	**P85-833**
C	**CONTACTOR COMPLETE,** for references, see page 47	
D	**OVERLOAD RELAY COMPLETE,** for references, see page 47	
E	**CONNECTOR COMPLETE,** for references, see page 47	
F	**SNUBBING DEVICE COMPLETE**	**P85-838**
G	**HEATER COMPLETE,** 15 watts, 110 volts	**P85-928**
1	**CASE COMPLETE,** includes the following parts 1, 3, 4, and 18	**P85-321**
2	**COVER COMPLETE,** with insulation	**P85-790**
3	**STUD,** long, hinge for cover	**P85-323**
4	**STUD,** short, hinge for cover	**P85-324**
5	**SCREW,** used as terminal post	**P85-137**
6	**WASHER,** for terminal posts	**P76-108**
7	**NUT,** for terminal posts	**P62-333**
8	**SCREW,** for fastening contactor to terminal board	**P85-246**
8A	**WASHER,** lock, for above	**P85-803**
10	**NUT,** for terminal posts	**P65-585**
11	**SCREW,** for fastening overload relay to terminal board	**P85-245**
11A	**WASHER,** lock, for above	**P85-803**
12	**SCREW,** for fastening relay group to case	**P85-527**
12A	**WASHER,** lock, for above	**P85-801**
14	**CONNECTOR,** snub resistor lead, for 110-volt operation	**P85-972**
16	**NAME PLATE,** for controller	**P85-139**
16A	**SCREW,** for above	**P85-795**

Biased-Neutral Controller
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
17	**SEAL,** car, for cover	**P62-299**
18	**STUD,** shouldered, for sealing cover	**P85-155**
19	**RECTIFIER,** for 110-volt operation	**A53-321**
19A	As above, except for 24-volt operation	**A53-322**
20	**PLUG,** for case	**P85-333**
21	**SPACER,** for use between terminal board and contact also between overload relay and terminal board	**P85-583**
22	**NUT,** for terminal posts	**P76-129**
23	**HANDLE,** for cover	**P85-841**
24	**WASHER,** for terminal posts	**P62-196**
25	**WASHER,** lock, for terminal posts	**P62-401**
26	**SPRING,** for handle	**P85-216**
27	**TERMINAL BOARD,** only	**P85-843**
28	**BOLT,** for snubbing device	**P85-837**
29	**NUT,** elastic stop, 3/8", for bolt Ref. 28	**P85-442**
30	**NUT,** for spring	**P85-822**
31	**SPRING,** for snubbing device	**P85-195**
32	**WASHER,** for spring	**P85-179**
33	**COLLAR,** for washer Ref. 32	**P85-142**
34	**WASHER,** for collar Ref. 33	**P85-183**
35	**NUT,** for rectifier	**P85-205**
35A	**WASHER,** lock, for above	**P76-106**
36	**RESISTOR,** only, 15 watts, 110 volts	**P3-235**

Memoranda



Contactor and overload relay.

Contactor and Overload Relay

For Biased-Neutral Controller

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**CONTACTOR COMPLETE,** for 10-volt control	**P85-421**
A1	As above, except for 24-volt control	**P85-420**
B	**OVERLOAD RELAY COMPLETE,** for 10-volt control	**P85-425**
B1	As above, except for 24-volt control	**P85-426**
C	**CONTACT BLOCK COMPLETE,** for contactor	**P85-786**
D	**ARMATURE COMPLETE,** for contactor	**P85-433**
E	**CONTACT COMPLETE**	**P85-328**
F	**ARMATURE COMPLETE,** for overload relay	**P85-432**
G	**BLOCK COMPLETE,** for overload relay	**P85-785**
1	**SCREW,** for contactor	**P85-295**
1A	**WASHER,** lock, for above	**P76-145**
2	**PLATE COMPLETE,** with bushing and rivets, for contactor	**P85-419**
3	**CONNECTOR COMPLETE**	**P85-445**
4	**WASHER,** strap, for screws Ref. 23	**P62-260**
6	**ARM COMPLETE,** for contactor	**P85-428**
7	**BRACKET,** for arm	**P85-554**
8	**SCREW,** for mounting blocks Refs. C and G	**P85-293**
8A	**WASHER,** lock, for above	**P62-401**
9	**INSULATOR,** for terminal posts	**P62-330**
10	**WASHER,** for nut Ref. 11 and screw Ref. 63	**P76-247**
11	**NUT,** for insulators and screw Ref. 63, also for mounting rectifier, Ref. 13	**P76-129**
11A	**WASHER,** lock, for above	**P62-401**
12	**WASHER,** for nut on rectifier	**P85-390**
13	**RECTIFIER COMPLETE,** for 10-volt control	**A53-323**
13A	As above, except for 24-volt control	**A53-324**
14	**WASHER,** spring, for holding coils tight	**P62-163**
15	**CORE COMPLETE,** with yoke, for contactor	**P85-909**
16	**BRACKET,** for arm	**P85-553**
17	**EYELET,** for nut Ref. 18	**P85-414**
18	**NUT,** elastic stop, for stud	**P85-443**
20	**SPRING,** for arm	**P85-177**
21	**BRACKET COMPLETE,** with core heads, rivets and stud, for contactor	**P85-430**

May 1988 GENERAL RAILWAY SIGNAL

Switch Machine Motors

For Models 5E, 5F, 5G, and 5H Switch Machines, 24-and 110-volt, direct-current

Parts List

For use only with machines with dynamic snub

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
21	**COVER,** for commutator	**P85-811**
22	**NAME PLATE** for motor	**P85-140**
22A	**SCREW,** for above	**P85-797**
23	**WASHER,** fibre, for coils	**P85-307**
24	**CASE,** only	**P85-540**
25	**COIL,** set, for 24-volt motor, consists of two coils and pole pieces	**P85-936**
25A	As above, except for 110-volt motor	**P85-935**
26	**WASHER,** insulating	**P85-161**
27	**POLE PIECE**	**P85-338**
28	**BEARING,** ball, for each end of armature shaft	**P85-573**
29	**KEY,** for pinion of 110-volt motor	**P85-101**
30	**PIN,** roll, for pinion of 110-volt motor	**P85-318**
31	**PINION,** for 110-volt motor	**P85-509**
32	**KEY,** for pinion of 24-volt motor	**P85-128**
33	**PINION,** for 24-volt motor	**P85-507**
34	**PIN,** roll, for pinion of 24-volt motor	**P85-319**
35	**MAGNET COMPLETE**	**P85-281**
36	**MAGNET COMPLETE**	**P85-280**
37	**WASHER,** wave, for bearing	**P85-182**
39	**NUT,** for brush holder	**P85-205**
39A	**WASHER,** lock, for above	**P76-106**
40	**SCREW,** for fastening front bearing to case	**P85-440**
40A	**WASHER,** lock, for above	**P81-122**
41	**SCREW,** for mounting pole pieces	**P65-210**
41A	**WASHER,** lock, for above	**P76-106**
42	**INSULATION,** for coils	**P85-232**
43	**INSULATION,** 1/32" thick, for coils	**P85-290**
43A	As above, except 1/16" thick	**P85-291**
44	**NUT,** for terminal posts	**P62-333**
45	**WASHER,** for terminal posts	**P76-108**
46	**CONNECTOR,** left hand	**P85-256**
47	**HOLDER,** left hand	**P85-375**

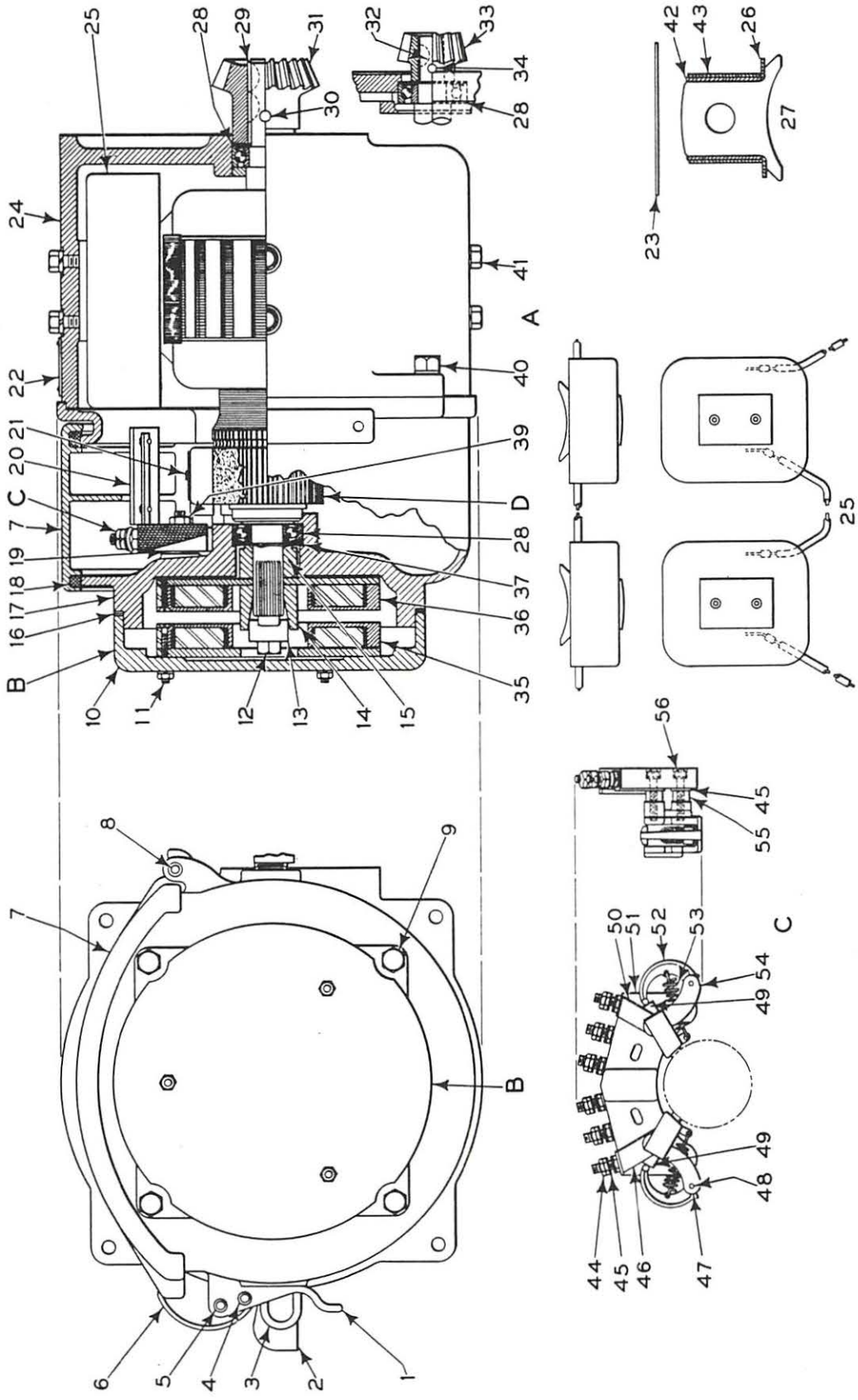
Contactor and Overload Relay

For Biased-Neutral Controller

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
49A	**NUT,** for above	**P76-129**
50	**CONNECTOR,** for overload relay	**P85-446**
51	**NUT,** special, for overload relay	**P76-333**
52	**WASHER,** for spring Ref. 53	**P85-581**
53	**SPRING,** for overload relay	**P85-198**
54	**SCREW,** for overload relay	**P85-350**
55	**WASHER,** spring, for coil	**P62-158**
56	**CORE AND BRACKET COMPLETE,** for overload relay	**P85-876**
57	**SLUG,** for overload relay	**P85-978**
58	**WASHER,** flat, for coil	**P85-207**
59	**COIL,** for overload relay	**P85-369**
60	**YOKE,** for overload relay	**P85-453**
61	**SCREW,** for fastening core and bracket to yoke	**P85-244**
61A	**WASHER,** lock, for above	**P76-106**
62	**COIL,** for use with 10-volt control	**P85-367**
62A	As above, except for 24-volt control	**P85-368**
63	**SCREW,** used as terminal post	**P85-135**
63A	**WASHER,** lock, for above	**P62-401**
64	**BLOCK,** only	**P85-556**
65	**SUPPORT COMPLETE,** for overload relay	**P85-757**
66	**CONNECTOR COMPLETE,** for use with coil Ref. 59 for 110-volt d-c high-speed switch machines	**P85-447**
66A	As above, except for 24-volt, high-speed switch machines	**P85-449**
67	**SCREW,** for connector Ref. 3 and finger Ref. 44	**P85-308**
67A	**NUT,** for above	**P85-924**
67B	**WASHER,** lock, for above	**P65-730**
68	**CONNECTOR**	**P85-448**
69	**FINGER COMPLETE,** with contact	**P85-836**
70	**SUPPORT COMPLETE,** with spring and stop	**P85-756**



Switch machine motors.

Switch Machine Motors

For Models 5E, 5F, 5G, and 5H Switch Machines, 24-and 110-volt, direct-current

Parts List

For use only with machines with dynamic snub
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**MOTOR COMPLETE,** 110-volt, direct-current, high speed with magnetic detent	**P85-537**
A1	As above, except 24-volt	**P85-536**
B	**DETENT COMPLETE,** for Models 5E, 5F, 5G & 5H switch machines	**P85-981**
B1	**DETENT COMPLETE,** with commutator shield and cover for Model 5A switch machine using motor 45630-13	**P85-980**
C	**BRUSH HOLDER COMPLETE,** does not include brushes	**P85-223**
D	**ARMATURE COMPLETE,** for 110-volt motor	**P85-538**
D1	As above, except for 24-volt motor	**P85-539**
1	**HASP,** for cover	**P85-310**
2	**VENTILATOR,** for case	**P81-204**
2A	**PLUG,** pipe	**P85-127**
3	**STAPLE,** for hasp	**P81-141**
4	**PIN,** roll, for strap	**P85-314**
5	**PIN,** roll, for hasp	**P85-316**
6	**STRAP,** for cover	**P85-362**
7	**COVER COMPLETE**	**P85-789**
9	**SCREW,** for fastening detent to motor	**P85-130**
9A	**WASHER,** lock, for above	**P76-106**
10	**CASE,** only	**P85-541**
11	**SCREW,** No. 10-32, for fastening magnets to case	**P85-330**
11A	**NUT,** for above	**P76-129**
11B	**WASHER,** lock, for above	**P76-318**
12	**SCREW,** for cone	**P85-231**
12A	**WASHER,** lock, for above	**P81-205**
13	**CONE,** only	**P85-263**
14	**SPACER**	**P85-423**
15	**SPACER**	**P85-422**
16	**GASKET,** for case	**P85-296**
17	**CASE,** only	**P85-542**
18	**GASKET,** 2'-9" long, for cover. Specify number of feet.	**P85-460**
19	**WASHER,** for brush holder	**P85-221**
20	**SHIELD,** for armature	**P85-282**

Switch Machine Motors

For Models 5E, 5F, 5G, and 5H Switch Machines, 24-and 110-volt, direct-current

Parts List

For use only with machines with dynamic snub

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
21	**COVER,** for commutator	**P85-811**
22	**NAME PLATE** for motor	**P85-140**
22A	**SCREW,** for above	**P85-797**
23	**WASHER,** fibre, for coils	**P85-307**
24	**CASE,** only	**P85-540**
25	**COIL,** set, for 24-volt motor, consists of two coils and pole pieces	**P85-936**
25A	As above, except for 110-volt motor	**P85-935**
26	**WASHER,** insulating	**P85-161**
27	**POLE PIECE**	**P85-338**
28	**BEARING,** ball, for each end of armature shaft	**P85-573**
29	**KEY,** for pinion of 110-volt motor	**P85-101**
30	**PIN,** roll, for pinion of 110-volt motor	**P85-318**
31	**PINION,** for 110-volt motor	**P85-509**
32	**KEY,** for pinion of 24-volt motor	**P85-128**
33	**PINION,** for 24-volt motor	**P85-507**
34	**PIN,** roll, for pinion of 24-volt motor	**P85-319**
35	**MAGNET COMPLETE**	**P85-281**
36	**MAGNET COMPLETE**	**P85-280**
37	**WASHER,** wave, for bearing	**P85-182**
39	**NUT,** for brush holder	**P85-205**
39A	**WASHER,** lock, for above	**P76-106**
40	**SCREW,** for fastening front bearing to case	**P85-440**
40A	**WASHER,** lock, for above	**P81-122**
41	**SCREW,** for mounting pole pieces	**P65-210**
41A	**WASHER,** lock, for above	**P76-106**
42	**INSULATION,** for coils	**P85-232**
43	**INSULATION,** 1/32" thick, for coils	**P85-290**
43A	As above, except 1/16" thick	**P85-291**
44	**NUT,** for terminal posts	**P62-333**
45	**WASHER,** for terminal posts	**P76-108**
46	**CONNECTOR,** left hand	**P85-256**
47	**HOLDER,** left hand	**P85-375**

Switch Machine Motors

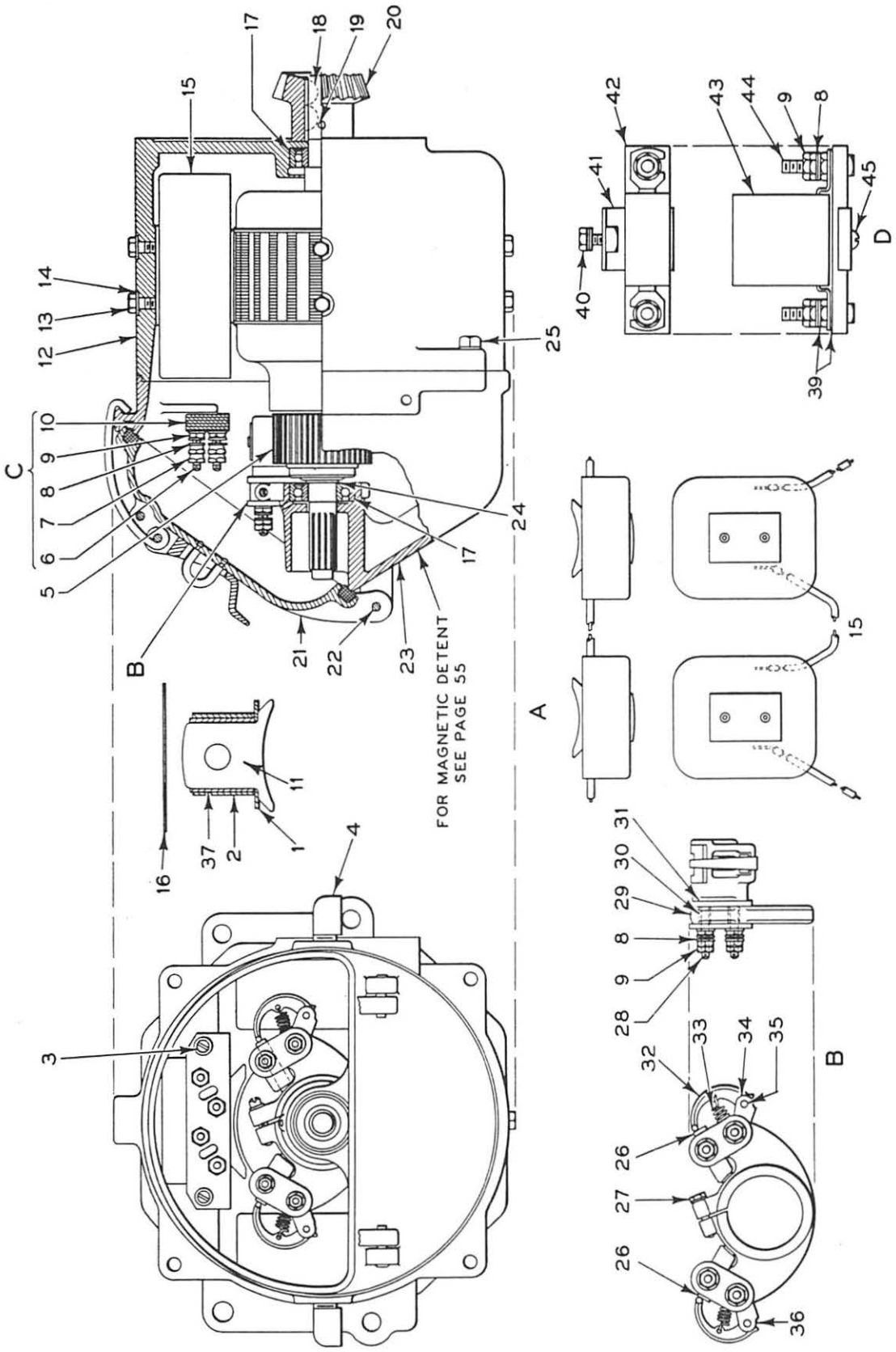
For Models 5E, 5F, 5G, and 5H Switch Machines, 24-and 110-volt, direct-current

Parts List

For use only with machines with dynamic snub

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
48	**PIN,** for arms	**P85-214**
49	**BRUSH,** right or left hand, for 110-volt motors	**P85-396**
49A	As above, except for 24-volt motors	**P85-395**
50	**CONNECTOR,** right hand	**P85-257**
51	**BLOCK,** for brush holder	**P85-783**
52	**ARM,** for brush	**P85-213**
53	**SPRING,** for arm	**P85-215**
54	**HOLDER,** right hand	**P85-374**
55	**SPACER,** for holders	**P85-582**
56	**SCREW,** for fastening holders to block	**P85-120**
56A	**WASHER,** lock, for above	**P85-801**



Switch machine motor.

Switch Machine Motor

For Model 5A Switch Machine

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**MOTOR COMPLETE,** 110-volt, direct-current, high-speed	**P85-535**
B	**BRUSH HOLDER COMPLETE,** does not include brushes	**P85-224**
C	**THERMAL BLOCK COMPLETE**	**P85-454**
D	**HEATER,** 12 watts, 110 volts, with mounting bracket	**P85-670**
1	**WASHER,** insulating, for field coil Ref. 15	**P85-161**
2	**INSULATION,** for field coil Ref. 15	**P85-232**
3	**SCREW,** for mounting terminal block	**P85-303**
3A	**WASHER,** for above	**P76-108**
4	**VENTILATOR**	**P81-204**
5	**ARMATURE COMPLETE**	**P85-538**
6	**SCREW,** used as terminal post	**P76-100**
7	**NUT,** for terminal posts	**P76-131**
7A	**WASHER,** lock, for above	**P85-805**
8	**WASHER,** for terminal posts	**P76-108**
9	**NUT,** for terminal posts	**P65-585**
10	**BLOCK,** only	**P85-212**
11	**POLE PIECE COMPLETE**	**P86-448**
12	**CASE,** only	**P85-540**
13	**SCREW,** for mounting pole piece	**P65-210**
14	**WASHER,** lock, for screw Ref. 13	**P76-106**
15	**FIELD COIL,** set, for motor, consists of two coils and pole pieces	**P85-935**
16	**WASHER,** fibre, for use between coil and case	**P85-307**
17	**BEARING,** ball, for each end of motor shaft	**P85-373**
18	**KEY,** for fastening pinion to shaft	**P85-101**
19	**PIN,** roll, for fastening pinion to shaft	**P85-318**
20	**PINION,** bevel, 20 teeth	**P85-509**
21	**COVER COMPLETE,** with hasp	**P85-597**
22	**PIN,** roll, for cover	**P50-734**
23	**BEARING,** front	**P85-543**
24	**WASHER,** wave, for bearing Ref. 17	**P85-182**
25	**SCREW,** for fastening front bearing to case	**P85-229**
25A	**WASHER,** lock, for above	**P81-122**

Switch Machine Motor

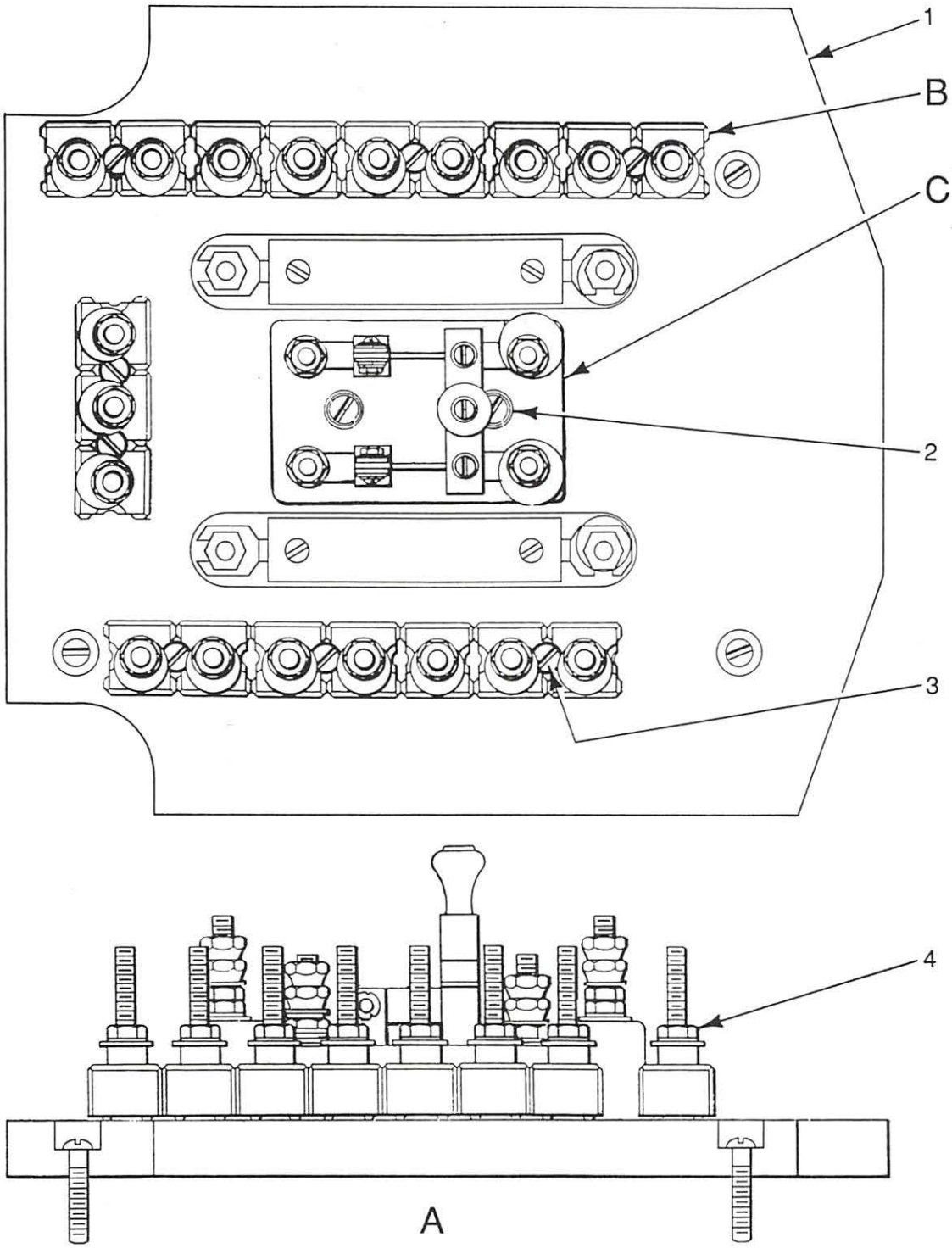
For Model 5A Switch Machine

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
26	**BRUSH,** right - or left-hand	**P85-396**
27	**SCREW,** for brush holder	**P65-272**
27A	**WASHER,** for above	**P81-121**
28	**SCREW,** used as terminal post	**P85-138**
29	**YOKE,** for brush holder	**P85-222**
30	**BUSHING,** insulation, for screw Ref. 28	**P85-429**
31	**LINK,** for brush holder	**P85-394**
32	**ARM,** for brush holder	**P85-213**
33	**SPRING,** for arm	**P85-215**
34	**HOLDER,** right hand	**P85-375**
35	**PIN,** for arm Ref. 32 and holders Refs. 34 and 36	**P85-214**
36	**HOLDER,** left-hand	**P85-374**
37	**INSULATION,** 1/16" thick	**P85-291**
37A	As above, except 1/32" thick	**P85-290**
38	**RESISTOR,** only, 15 watts	**P85-929**
39	**WASHER,** lock, for terminal posts	**P62-402**
40	**SCREW,** for mounting resistor	**P50-809**
40A	**WASHER,** lock, for above	**P81-121**
41	**BRACKET,** for heater	**P85-665**
42	**BLOCK,** for heater	**P85-617**
43	**RESISTOR,** only 110 volts, 12 watts	**P3-228**
44	**SCREW,** used as terminal post	**P85-10**
45	**SCREW,** for fastening block to bracket	**P65-200**
45A	**WASHER,** lock, for above	**P85-390**

Memoranda

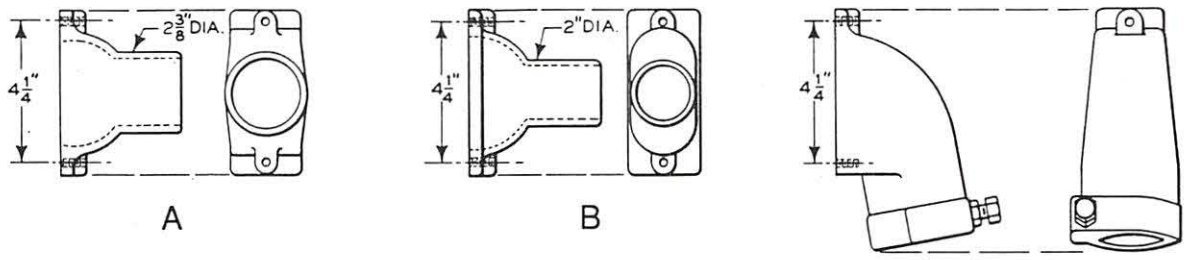


Terminal board.

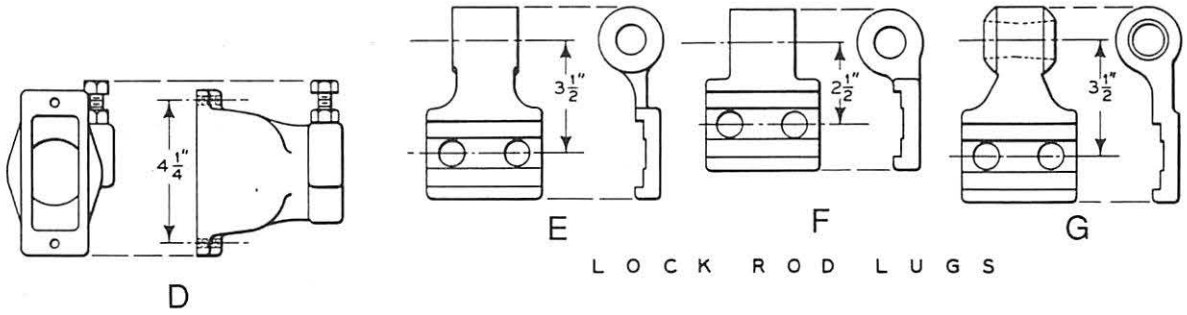
Terminal Board
Parts List

Order by catalog number and name shown in bold type

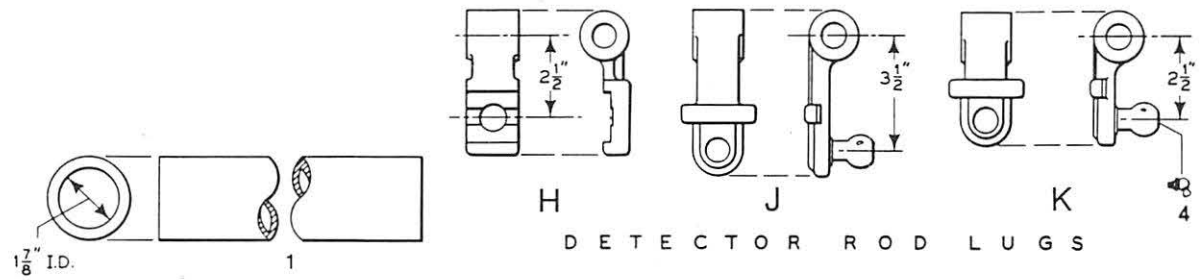
REF.	NAME	CATALOG NUMBER
A	**TERMINAL BOARD COMPLETE,** with twenty terminal posts and disconnecting switch	**P85-867**
B	**TERMINAL BLOCK,** 10-way	**P85-878**
C	**SWITCH COMPLETE,** disconnecting	**P85-807**
1	**BOARD,** only, terminal	**P85-555**
2	**SCREW,** for mounting switch	**P85-113**
2A	**WASHER,** for above	**P62-196**
2B	**WASHER,** rubber, for above	**P85-209**
3	**SCREW,** for mounting terminal blocks	**P85-125**
4	**NUT,** for terminal posts	**P65-585**
4A	**WASHER,** for above	**P76-108**



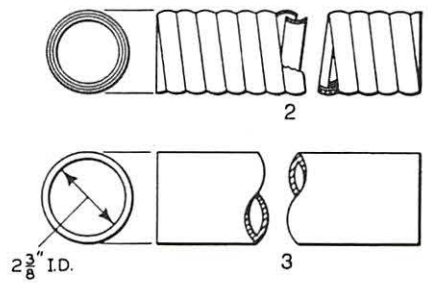
WIRE ENTRANCE COUPLINGS



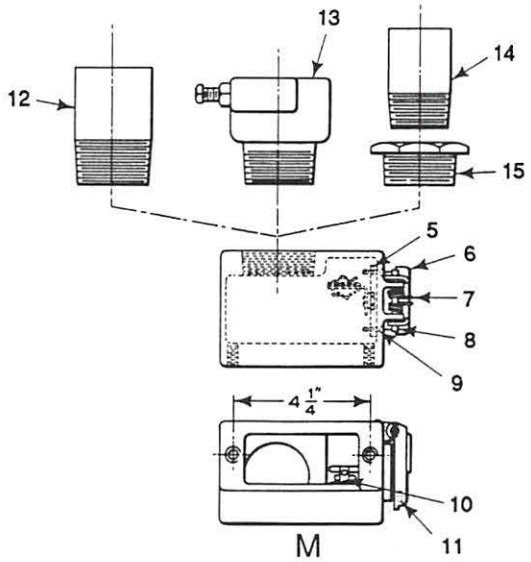
LOCK ROD LUGS



DETECTOR ROD LUGS



CONDUIT



ENTRANCE COUPLING
WITH TELEPHONE JACK

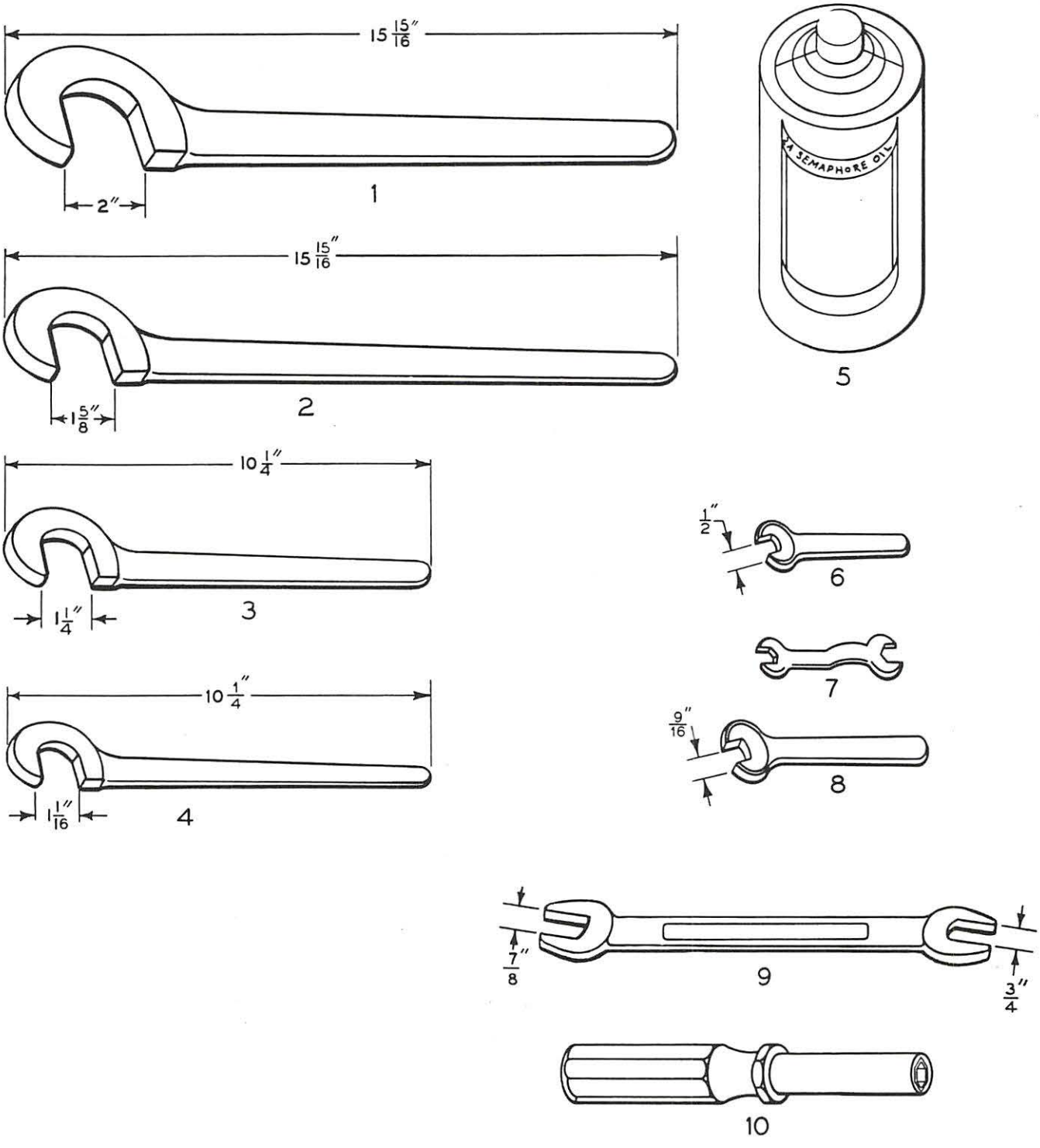
Wire entrance couplings and conduit, lock-rod and detector-rod lugs.

Wire Entrance Couplings and Conduit Lock-Rod and Detector-Rod Lugs

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**COUPLING,** for 2-3/8" I.D., rubber conduit	**P85-500**
B	**COUPLING,** for 1-7/8" I.D., rubber conduit	**P85-501**
C	**COUPLING,** offse t, for 2" flexible conduit	**P85-502**
D	**COUPLING,** straight, for 2" flexible conduit	**P85-503**
E	**LUG,** 3-1/2" spacing, for 1" dia. lock rod	**P85-560**
F	**LUG,** 2-1/2" spacing, for 1" dia. lock rod	**P85-561**
G	**LUG,** 3-1/2" spacing, swivel type, for 1" dia. lock rod, includes cup nuts	**P85-562**
H	**LUG,** 2-1/2" spacing, for 3/4" dia. detector rod	**P85-563**
J	**LUG,** 3-1/2" spacing, for 3/4" dia. detector rod	**P85-564**
K	**LUG,** 2-1/2" spacing, for 3/4" dia. detector rod	**P85-565**
M	**WIRE ENTRANCE COUPLING** with telephone jack, mounted in case, no conduit fittings	**P85-510**
1	**CONDUIT,** 1-7/8" I.D., solid rubber, recommended length 3'	**P85-520**
2	**CONDUIT,** 2" flexible, recommended length 3'	**P85-530**
3	**CONDUIT,** 2-3/8" I.D., solid rubber, recommended length 3', specify number of feet required	**P85-535**
4	**FITTING,** grease, for detector rod lugs	**P87-101**
5	**PLATE,** insulating, for jack	**P85-360**
6	**COVER,** complete	**P85-791**
7	**SPRING,** for cover	**P85-210**
8	**PIN,** for cover	**P85-170**
9	**SCREW,** for mounting plate Ref. 5	**P85-900**
10	**JACK,** midget	**P85-880**
11	**GASKET,** for cover	**P85-298**
12	**NIPPLE,** for 2-3/8" I.D. rubber conduit	**P85-438**
13	**COUPLING,** for 2" flexible conduit	**P85-546**
14	**NIPPLE,** for 1-7/8" I.D. rubber conduit	**P85-564**
15	**REDUCER,** for nipple Ref. 14	**P85-211**



Tools and oil.

Rheometer, Tools and Oil

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	**WRENCH,** switch-adjusting, for 1-1/4" throw rod	**P85-405**
2	**WRENCH,** switch-adjusting, for 1" lock rod	**P85-406**
3	**WRENCH,** switch-adjusting, for 3/4" lock and detector rods	**P85-407**
4	**WRENCH,** switch-adjusting, for 5/8" detector rods	**P85-408**
5	**OIL,** semaphore, MS 2-50, one quart	**P85-772**
6	**WRENCH**	**P85-410**
7	**WRENCH,** for No. 10 and No. 14 terminal post nuts	**P65-913**
8	**WRENCH**	**P65-910**
9	**WRENCH,** for removing motor and gear bracket	**P85-461**
10	**SOCKET WRENCH**, insulated, for No. 14 A.A.R. terminal post nuts	**P65-901**

CATALOG SECTION P85
PARTS LIST
Model 6
Electric Switch Machine

FOR ASSEMBLIES, SEE CATALOG SEC. 85-3

CONTENTS Page

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Conduit and Couplings 109
Contact Group 102
Contact Movement 96
Cut-out Switch 86
Frame 86
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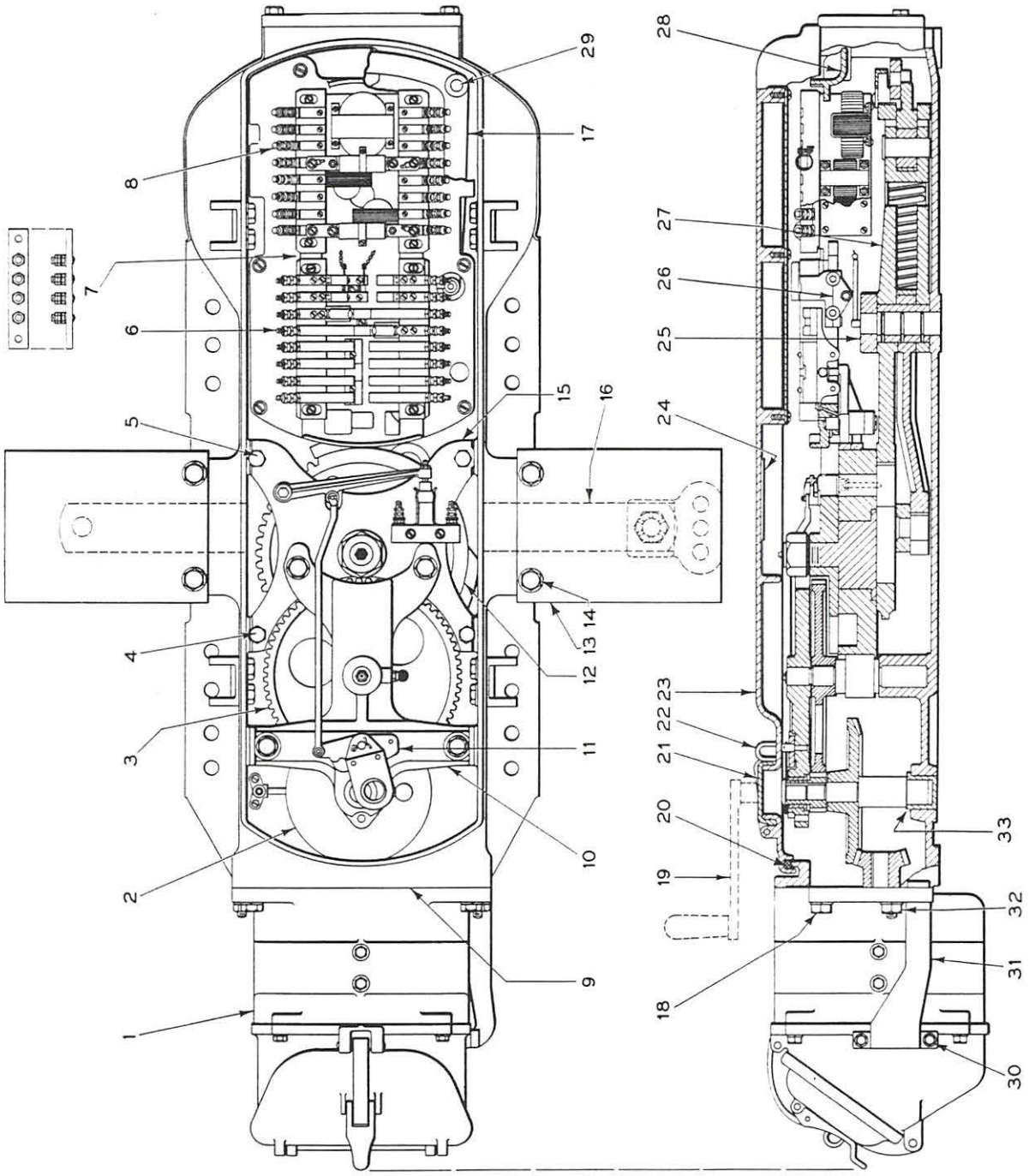
Junction Boxes 110
Motor 106
Sectors 94

GENERAL RAILWAY SIGNAL
A UNIT OF GENERAL SIGNAL



Model 6 switch machine.

Model 6 Switch Machine

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	**MOTOR COMPLETE,** for references see page 106	
2	**GEAR COMPLETE,** for references see page 90	
3	**GEAR COMPLETE,** intermediate, for references see page 90	
4	**SCREW,** for mounting bracket Ref. 15	**P85-241**
4A	**WASHER,** lock, for above	**P50-101**
5	**SCREW,** for mounting bracket Ref. 15	**P85-40**
5A	**WASHER,** lock, for above	**P85-109**
6	**CONTACT GROUP COMPLETE,** for references see page 102	
7	**BOARD COMPLETE,** for use when transformer group is omitted	**P85-657**
8	**TRANSFORMER GROUP COMPLETE,** for references see page 96	
9	**FRAME,** main, for references see page 86	
10	**BRACKET,** for references see page 86	
11	**SWITCH,** cutout, for references see page 86	
12	**GEAR,** main, for references see page 90	
13	**GUARD,** for throw bar	**P85-618**
14	**SCREW,** for guards	**P50-403**
14A	**WASHER,** lock, for above	**P50-101**
15	**BRACKET,** for main gear	**P85-622**
16	**THROW BAR COMPLETE**	**P85-639**
17	**CRANK COMPLETE,** with two studs, operates contacts from sector	**P85-668**
18	**SCREW,** for mounting motor at top	**P85-241**
18A	**WASHER,** lock, for above	**P50-101**
19	**CRANK COMPLETE,** for hand operation	**P85-826**
20	**GASKET,** 9' - 0" long, for cover. Specify number feet	**P76-132**
21	**COVER COMPLETE,** includes hinge pin, for crank opening	**P85-788**
22	**STAPLE,** for cover	**P81-141**
23	**COVER COMPLETE,** includes hasp and all riveted parts	**P85-80**
24	**NAME PLATE**	**P87-148**
24A	**SCREW,** drive, for above	**P85-796**
25	**BRACKET,** for sector, includes stud	**P85-638**
26	**MOVEMENT,** contact, for references see page 96	
27	**SECTOR COMPLETE,** for references see page 94	

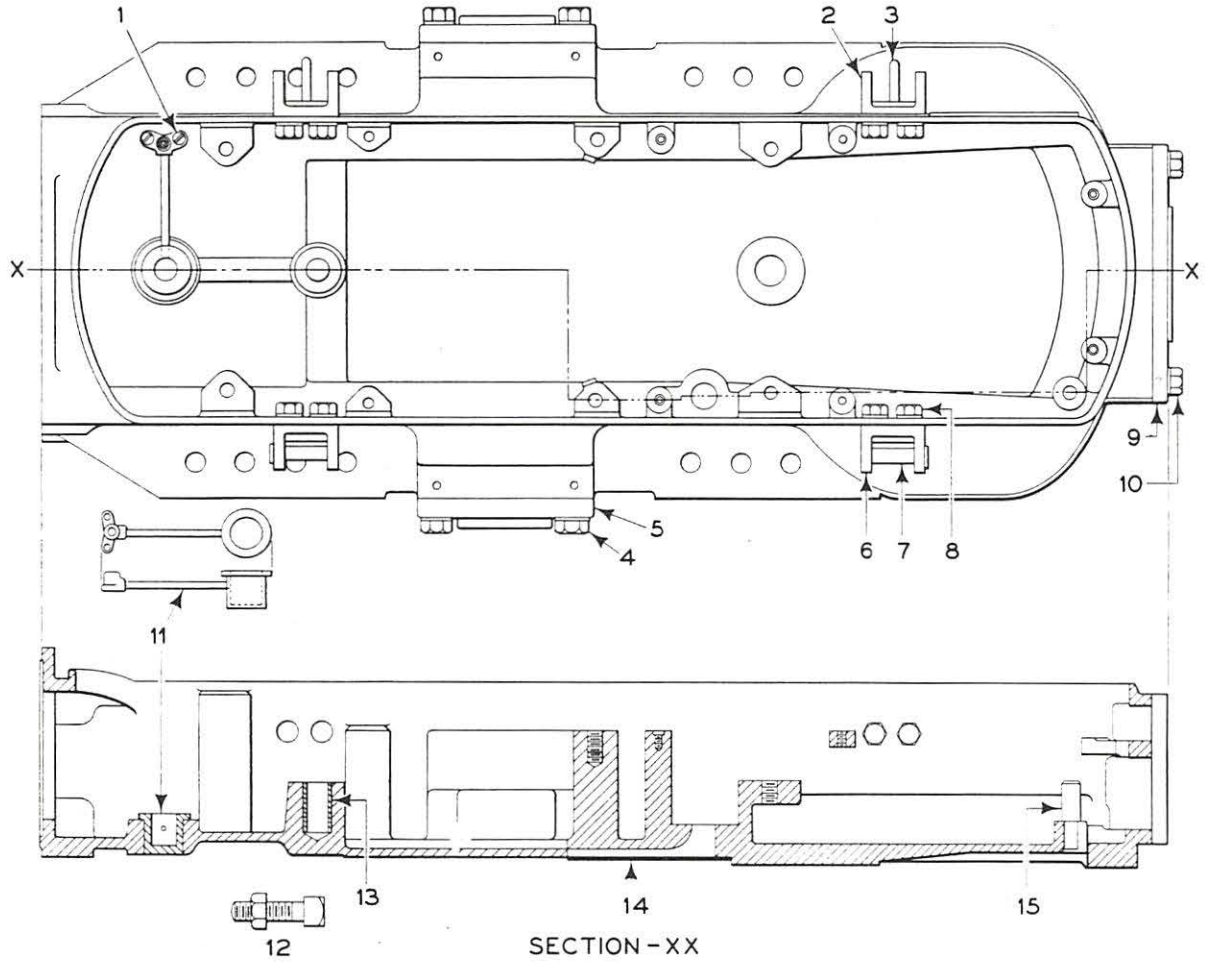
Model 6 Switch Machine

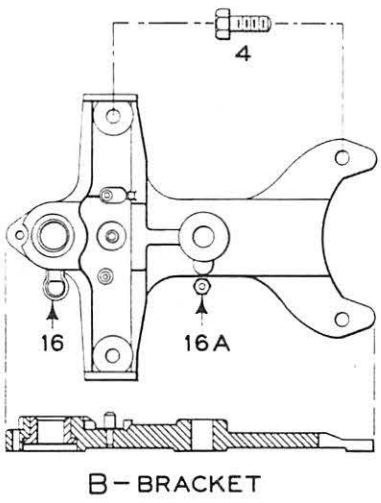
Parts List

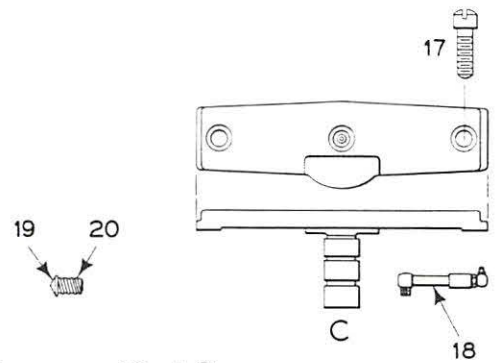
Order by catalog number and name shown in bold type

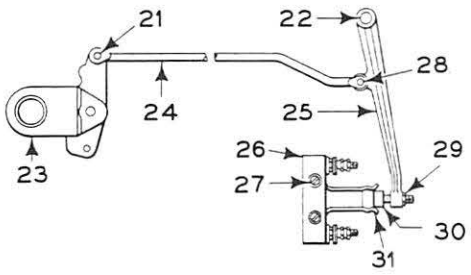
REF.	NAME	CATALOG NUMBER
28	**FRAME,** contact, for references see page 86	
29	**SCREW,** for fastening crank to stud	**P85-525**
29A	**WASHER,** lock, for above	**P81-121**
29B	**WASHER,** for above	**P85-50**
30	**SCREW,** for fastening coupling to motor	**P85-242**
30A	**WASHER,** lock, for above	**P76-106**
31	**COUPLING,** wire inlet for motor	**P85-562**
32	**STUD,** for mounting motor at bottom	**P85-566**
32A	**NUT,** for above	**P85-204**
32B	**WASHER,** lock, for above	**P50-101**
33	**WASHER,** spacer, for adjusting gear backlash	**P85-1384**

Memoranda









Frames, brackets and cut-out switch.

Frames, Brackets and Cut-Out Switch

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**FRAME COMPLETE,** includes bushings for gear shafts; grease tube with fitting, plate and screws for wire duct, and stud for crank. Does not include bearing Ref. 5; lugs Refs. 2, or 6, and staple Ref. 3	P85-669
B	**BRACKET COMPLETE,** for gears	P85-701
C	**BRACKET COMPLETE,** includes stud for sector	P85-638
1	**SCREW,** for bushing and tube Ref. 11	P85-525
1A	**WASHER,** lock, for above	P81-121
2	**LUG,** for hasp	P85-67
3	**STAPLE,** for hasp	P85-64
4	**BOLT,** for fastening bearing to frame and bracket Ref. B to frame	P87-108
4A	**WASHER,** lock, for above	P85-109
5	**BEARING,** for throw bar	P85-648
6	**LUG,** for hinge of cover	P85-66
7	**PIN,** hinge for cover	P85-65
8	**SCREW,** for fastening lugs to frame	P50-403
8A	**WASHER,** lock, for above	P50-101
9	**PLATE,** adapter, for entrance coupling	P85-649
10	**BOLT,** for plate	P85-31
10A	**WASHER,** lock, for above	P81-122
11	**TUBE COMPLETE,** with bushing for gear shaft	P85-302
11A	**FITTING,** grease, for above	P85-377
12	**BOLT AND NUT,** for mounting switch machine to tie plate	P85-25
12A	**WASHER,** lock, for above	P85-105
13	**BUSHING,** for intermediate gear shaft	P85-46
14	**PLATE,** for covering wire duct	P85-623
14A	**SCREW,** for above	P85-534
15	**STUD,** for crank	P85-16
16	**FITTING,** oiler, for gear shafts	P85-384
16A	**FITTING,** oiler, for machines with frequent operations	P85-74
16B	**FITTING,** grease	P85-379
17	**SCREW,** for fastening bracket Ref. C to frame	P85-71
17A	**WASHER,** lock, for above	P85-109

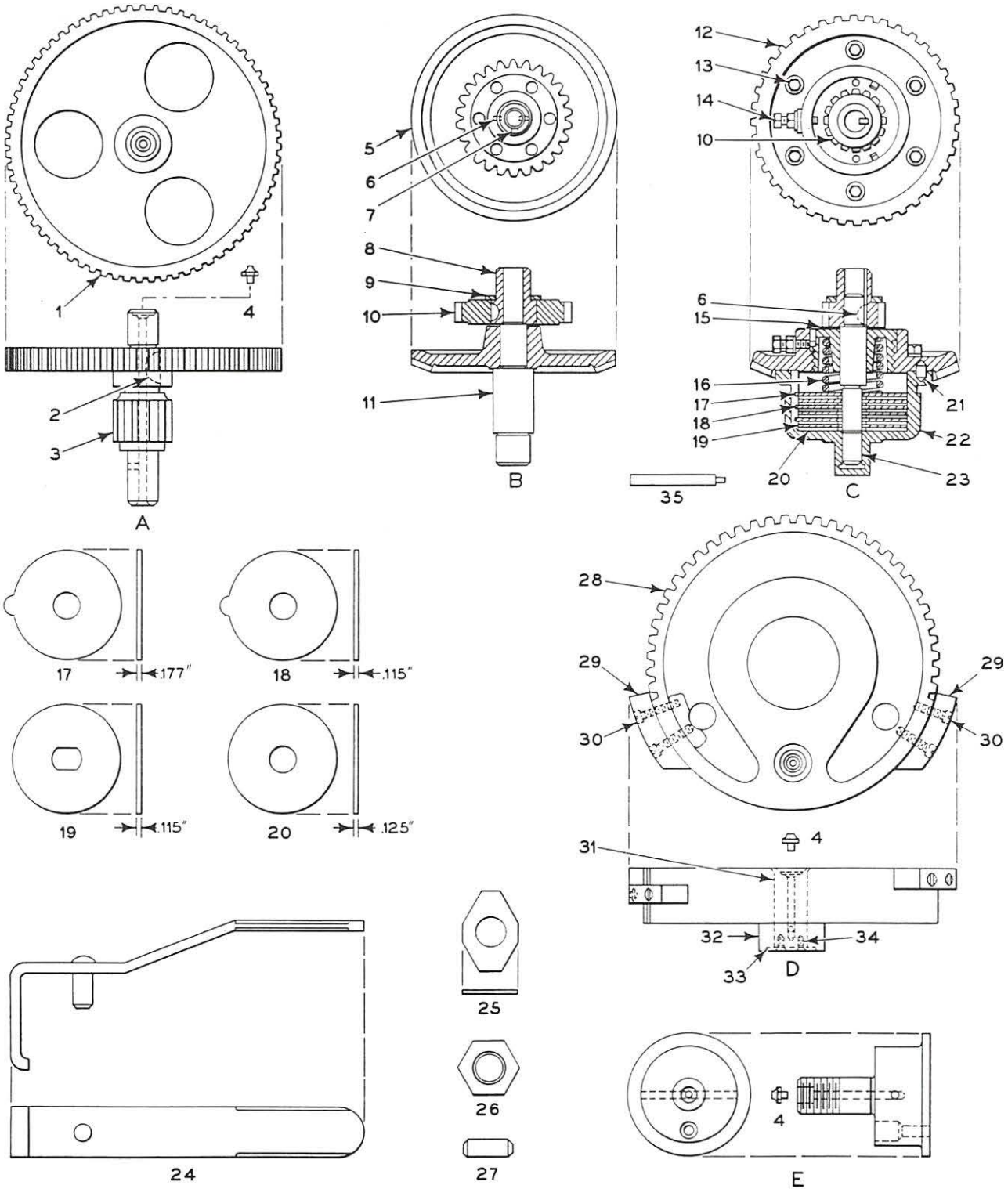
Frames, Brackets and Cut-Out Switch

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
18	**FITTING,** grease, for stud on bracket Ref. C	**P85-633**
19	**PLUNGER,** for cutout switch	**P85-354**
20	**SPRING,** for plunger	**P85-193**
21	**STUD,** for fastening rod to crank	**P85-14**
22	**STUD,** for lever	**P85-771**
23	**CRANK COMPLETE,** for cutout switch	**P85-705**
24	**ROD,** for cutout switch	**P85-249**
25	**LEVER,** for cutout switch	**P85-777**
26	**BLOCK COMPLETE**	**P85-774**
27	**SCREW,** 1/4" - 20 for block Ref. 26	**P73-137**
27A	**SCREW,** No. 14-24, for block Ref. 26	**P85-51**
27B	**WASHER,** lock, for above	**P81-121**
28	**PIN,** for rod Ref. 24	**P85-778**
29	**NUT,** for contact	**P85-561**
30	**CONTACT,** for cutout switch	**P85-776**
31	**FINGER,** only, for contact block	**P85-770**

Memoranda



Gears, clutches and bearings.

Gears, Clutches and Bearings

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**GEAR COMPLETE,** 80 tooth gear, for regular-speed machines	P85-599
A1	As above, except 64 tooth gear, for high-speed machines	P85-619
B	**GEAR COMPLETE,** for regular-speed machines	P85-662
B1	As above, except for high-speed machines	P85-661
C	**CLUTCH COMPLETE,** 16 tooth pinion, for regular-speed machines (For replacement parts only)	P85-478
C1	As above, except with 32 tooth pinion, for high-speed machines (For replacement parts only)	P85-81
D	**GEAR COMPLETE,** main, for regular and high-speed machines	P85-620
E	**BEARING COMPLETE,** for main gear	P85-512
1	**GEAR,** has 80 teeth, for regular-speed machines	P85-495
	NOTE: If gears to be replaced have 1" dia. holes, order gear complete Ref. A.	
1A	As above, except has 64 teeth, for high-speed machines	P85-83
	NOTE: If gears to be replaced have 1" dia. holes, order gear complete Ref. A1	
2	**KEY,** for fastening gear to shaft	P85-102
3	**PINION AND SHAFT,** meshes with main gear	P85-506
	NOTE: If pinion to be replaced has 1" shaft, order gear complete Refs. A or A1.	
4	**FITTING,** grease, for intermediate gear, main gear and main gear bearing	P85-380
5	**GEAR,** bevel, for regular and high-speed machines	P85-85
6	**KEY,** No. 9, for fastening gear to shaft	P85-101
7	**KEY,** 1/4" x 1", for fastening gear to shaft	P85-13
8	**BUSHING,** for high-speed machines only	P85-49
9	**WASHER,** for pinion	P85-48
10	**PINION,** for regular-speed machines	P85-1383
10A	As above, except for high-speed machines	P85-84
11	**SHAFT,** only, for replacement	P85-663
12	**GEAR,** 60 teeth	P85-510
13	**SCREW,** for fastening gear to case	P85-129
13A	**WASHER,** lock, for above	P76-106
14	**SCREW,** for locking nut Ref. 15	P85-359
14A	**NUT,** for above	P85-456
14B	**WASHER,** lock, for above	P76-106

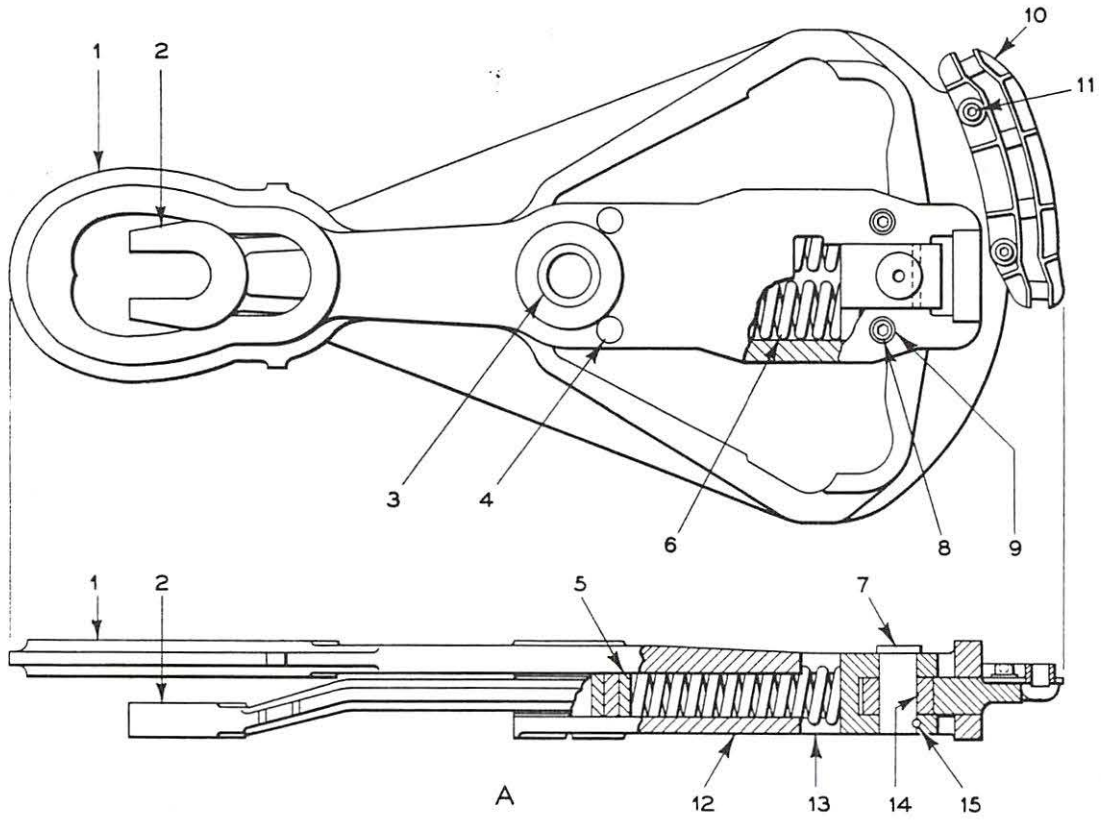
Gears, Clutches and Bearings

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
15	**NUT,** for clutch spring	**P85-521**
16	**SPRING,** for clutch Ref. C	**P85-192**
16A	**SPRING,** for clutch Ref. C1	**P85-22**
17	**DISK,** steel, .177" thick	**P85-520**
18	**DISK,** steel, .115" thick	**P85-519**
19	**DISK,** steel, .115" thick	**P85-518**
20	**DISK,** friction material, .125" thick	**P85-517**
21	**PIN**	**P85-336**
22	**CASE,** only	**P85-516**
23	**SHAFT,** only	**P85-522**
24	**WRENCH,** for adjusting clutch, used with pin Ref. 35	**P85-656**
25	**WASHER,** lock, for nut Ref. 26	**P85-239**
26	**NUT,** for stud on main gear	**P85-171**
27	**PIN,** for bearing Ref. E	**P85-332**
28	**GEAR,** assembled with stud Ref. 31	**P85-82**
29	**CAM**	**P85-68**
30	**SCREW,** for cams	**P85-58**
31	**STUD,** for roller **NOTE:** Stud must be secured in gear, Ref. 28, with retaining compound	**P85-88**
32	**ROLLER**	**P85-86**
33	**PLATE,** for roller	**P85-727**
34	**SCREW,** for plate	**P85-274**
35	**PIN,** for adjusting clutch	**P85-655**

Memoranda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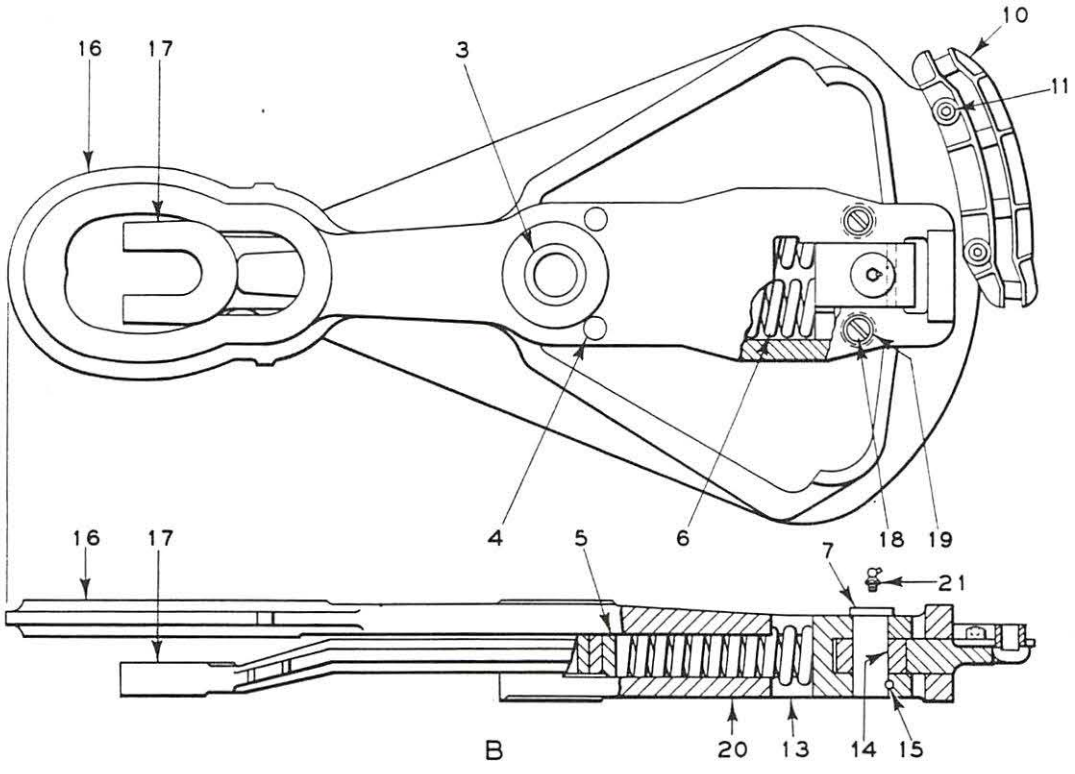
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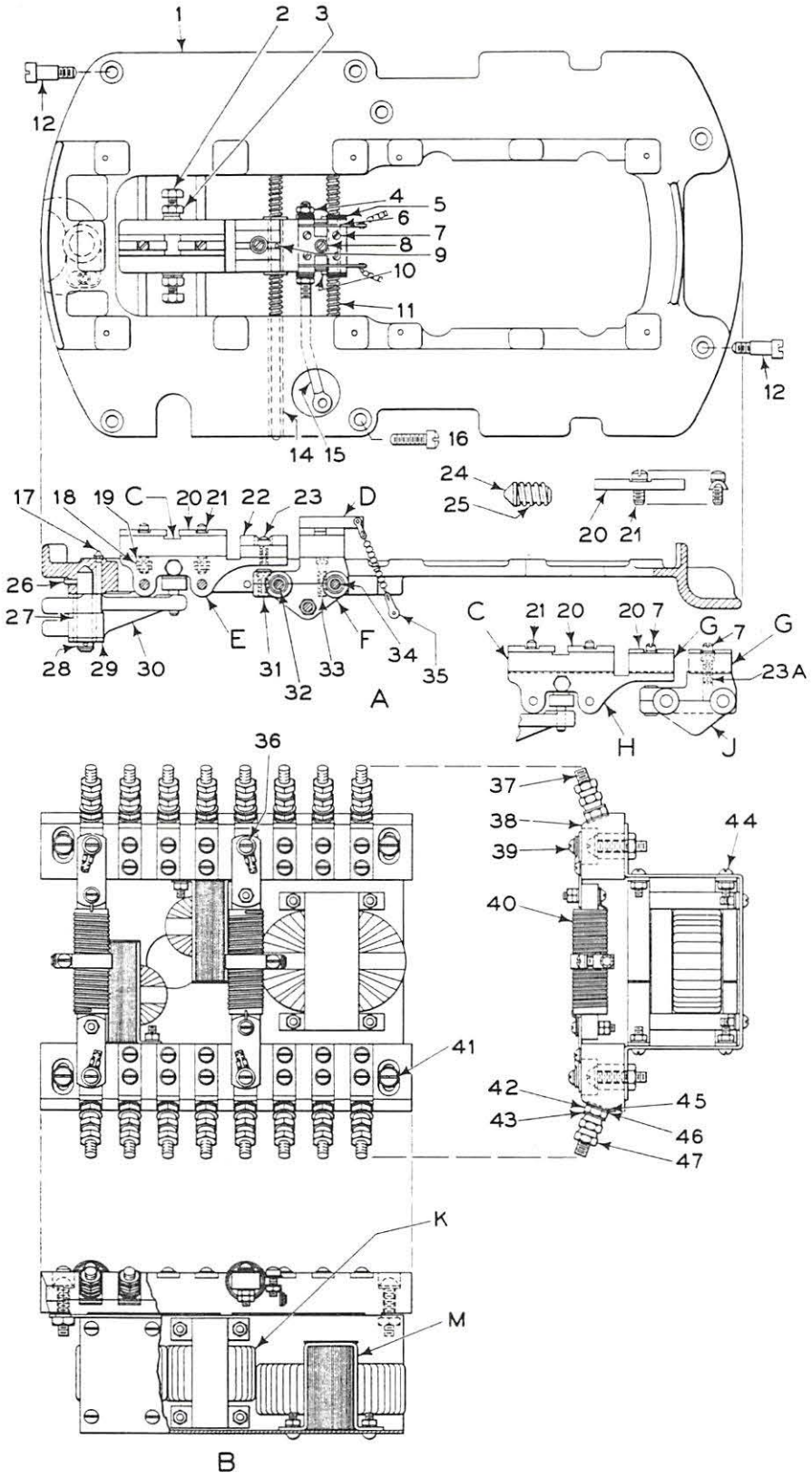
Sectors.

Sectors

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**SECTOR COMPLETE,** for regular-speed and high-speed machines, with serial number 1673 and up	**P85-636**
B	**SECTOR COMPLETE,** for regular-speed and high-speed machines, with serial numbers up to 1672	**P85-635**
1	**CAM,** for roller on main gear, for Ref. A	**P85-643**
2	**SECTOR,** operated by throw bar, for Ref. A	**P85-645**
3	**BUSHING,** for pivot of sector	**P85-44**
4	**STUD,** for block	**P85-15**
5	**BLOCK,** stop for springs	**P85-646**
6	**SPRING,** two required	**P85-21**
7	**PIN,** for roller	**P85-61**
8	**SCREW,** for bearing, for Ref. A	**P85-60**
8A	**WASHER,** lock, for above	**P81-122**
9	**SPACER,** for screw Ref. 8	**P85-616**
10	**CAM,** for sector	**P85-651**
11	**SCREW,** for fastening cam to sector	**P85-59**
11A	**WASHER,** lock, for above	**P76-106**
12	**ARM,** for sector, for Ref. A	**P85-654**
13	**BEARING,** supports pin and roller	**P85-652**
14	**ROLLER,** for sector	**P85-87**
15	**PIN,** for locking pin Ref. 7	**P85-37**
16	**CAM,** for roller on main gear, for Ref. B	**P85-642**
17	**SECTOR,** operated by throw bar, for Ref. B	**P85-644**
18	**SCREW,** for bearing, for Ref. B	**P85-24**
18A	**WASHER,** lock, for above	**P50-101**
19	**SPACER,** for screw Ref. 18	**P85-615**
20	**ARM,** for sector, for Ref. B	**P85-653**
21	**FITTING,** grease	**P87-101**



Contact movement and transformer group.

Contact Movement and Transformer Group

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**CONTACT PLATE COMPLETE,** for contact group shown on page 102 and transformer group shown on page 96	**P85-641**
B	**TRANSFORMER GROUP COMPLETE,** has one Type K 1/2 transformer Ref. M and two Type S2 transformers Ref. K	**P85-640**
C	**BLOCK COMPLETE,** for yoke, includes two contacts	**P85-819**
D	**BLOCK COMPLETE,** includes fingers and connectors	**P85-659**
E	**YOKE COMPLETE,** includes stud for arm, also includes blocks Refs. C and 22	**P85-612**
F	**YOKE COMPLETE,** includes upper and lower halves bolted together, for use with block Ref. D	**P85-611**
G	**BLOCK COMPLETE,** with two contacts	**P85-658**
H	**YOKE COMPLETE,** includes stud for arms, also includes block Ref. G.	**P85-613**
J	**YOKE COMPLETE,** includes upper and lower halves bolted together, for use with block Ref. G	**P85-610**
K	**TRANSFORMER,** Type S2, one volt primary, 50-60 Hz., has one 20 volt secondary	**A95-570**
M	**TRANSFORMER,** Type K 1/2, 110 volt, 60 Hz., has two secondaries, each 3 volts, with a tap at 2 volts	**A95-38**
1	**PLATE,** only	**P85-647**
2	**BOLT,** adjustable stop for block Ref. C	**P85-27**
3	**NUT,** for bolt Ref. 2	**P85-11**
3A	**WASHER,** lock, for above	**P81-121**
4	**NUT,** for operating rod	**P85-561**
5	**FINGER COMPLETE**	**P85-628**
6	**SLEEVE,** for pin Ref. 34	**P85-52**
7	**SCREW,** for fingers Ref. 5	**P85-870**
7A	**WASHER,** lock, for above	**P62-334**
8	**SCREW,** for fastening blocks to yoke	**P50-810**
8A	**WASHER,** lock, for above	**P81-122**
9	**PIN,** for sleeves	**P85-47**
10	**WASHER,** for springs	**P76-108**
11	**SPRING,** for pins Refs. 32 and 34	**P85-20**
12	**SCREW,** dowel, for fastening plate to main frame	**P85-39**
12A	**WASHER,** lock, for above	**P81-122**
13	Not used.	

Contact Movement and Transformer Group

Parts List

Order by catalog number and name shown in bold type

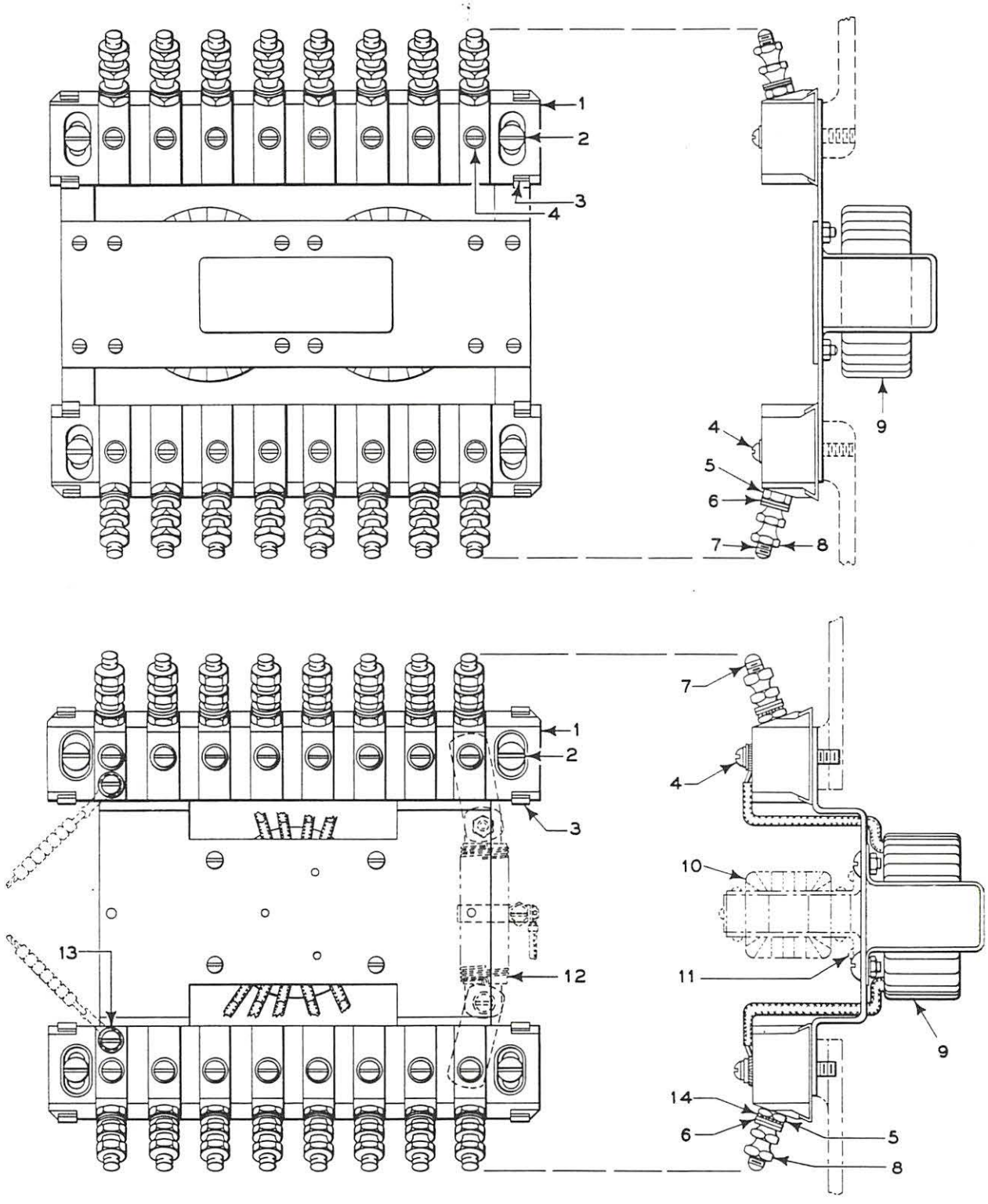
REF.	NAME	CATALOG NUMBER
14	**SLEEVE,** for pin Ref. 32	P85-53
15	**ROD,** operated by sector	P85-36
16	**SCREW,** for fastening plate to main frame	P85-1084
16A	**WASHER,** lock, for above	P76-106
17	**FITTING,** grease	P81-140
18	**NUT,** for stud in block Ref. C	P85-427
19	**WASHER,** lock, for above	P85-390
20	**CONTACT,** only	P85-376
21	**SCREW,** for mounting contacts	P85-870
21A	**WASHER,** lock, for above	P62-334
22	**BLOCK,** only	P85-91
23	**SCREW,** 1/4" -28 for fastening block Ref. 22 to yoke	P85-664
23A	As above, except No. 10-32, for fastening block Ref. G to yoke Ref. H or J	P65-231
23B	**WASHER,** lock, for above	P81-121
24	**PLUNGER,** for locking arm Ref. 30	P85-354
25	**SPRING,** for plunger	P85-193
26	**PIN,** for fastening pin Ref. 28	P85-19
27	**BUSHING,** for arm Ref. 30	P85-45
28	**PIN,** pivot for arm	P85-17
29	**WASHER,** for pin	P50-737
30	**ARM,** operated by cam on main gear	P85-89
31	**SCREW,** for fastening yokes together	P65-231
31A	**WASHER,** lock, for above	P85-390
32	**PIN,** for supporting yoke at position shown	P85-63
33	**SCREW,** for fastening yokes together	P85-289
33A	**WASHER,** lock, for above	P85-390
34	**PIN,** for supporting yokes at position shown	P85-62
35	**CONNECTOR COMPLETE,** short	P85-78
35A	As above, except long connector	P85-79
36	**SCREW,** for mounting resistance units	P65-839
37	**POST COMPLETE**	P85-753
38	**BLOCK,** only	P85-529

Contact Movement and Transformer Group

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
39	**SCREW,** for posts	**P65-206**
39A	**WASHER,** lock, for above	**P85-390**
39B	**WASHER,** for above	**P76-247**
40	**RESISTANCE UNIT,** adjustable, 2.25 ohms maximum	**P85-667**
41	**SCREW,** for mounting blocks Ref. 38	**P73-124**
41A	**WASHER,** for above	**P85-178**
41B	**NUT,** for above	**P85-12**
42	**NUT,** for terminal posts	**P62-333**
43	**WASHER,** for terminal posts	**P76-108**
44	**SCREW,** for mounting transformers	**P73-137**
44A	**NUT,** for above	**P85-276**
44B	**WASHER,** lock, for above	**P62-334**
45	**WASHER,** lock, for terminal posts	**P85-801**
46	**WASHER,** for terminal posts	**P50-157**
47	**NUT,** for terminal posts	**P76-131**



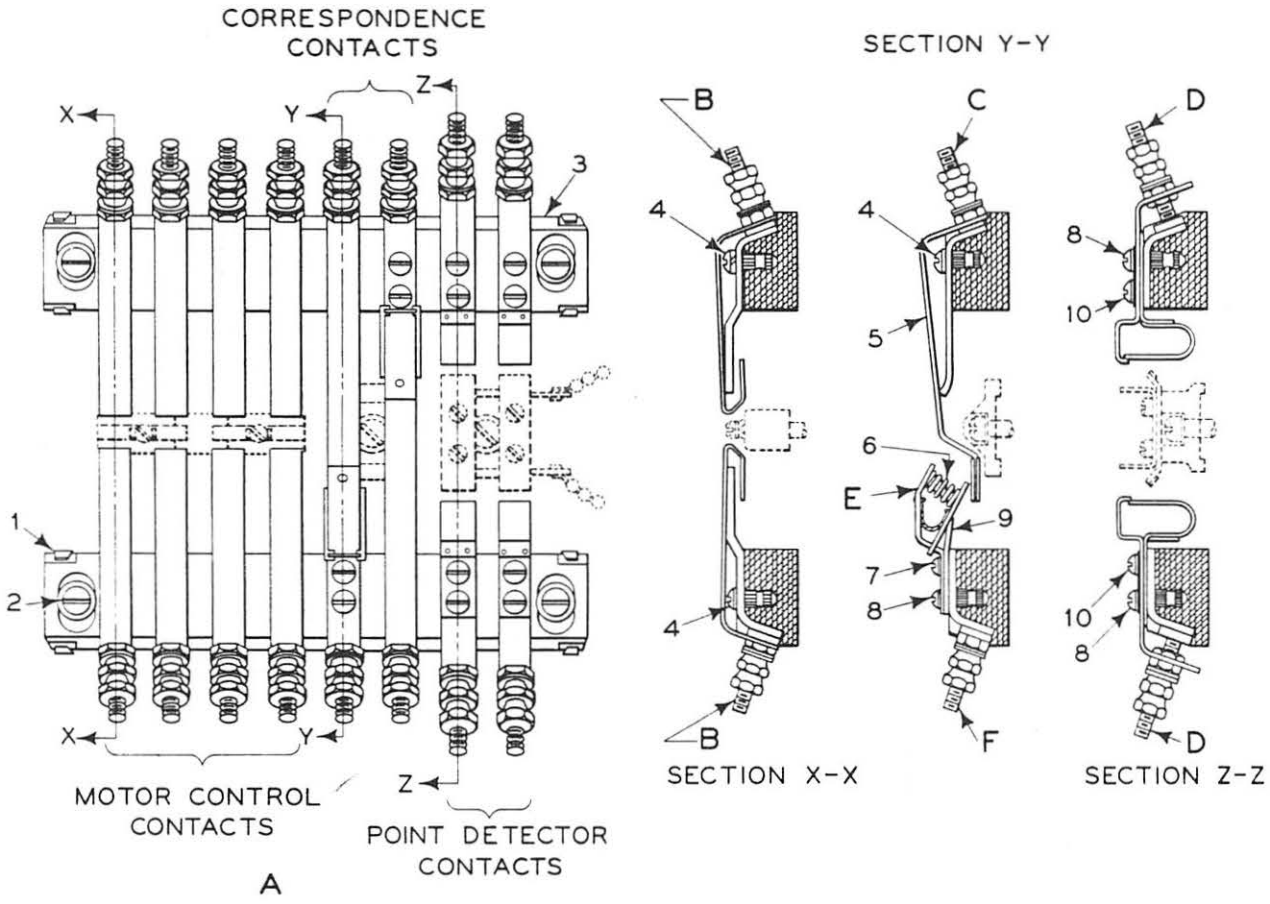
Transformer groups.

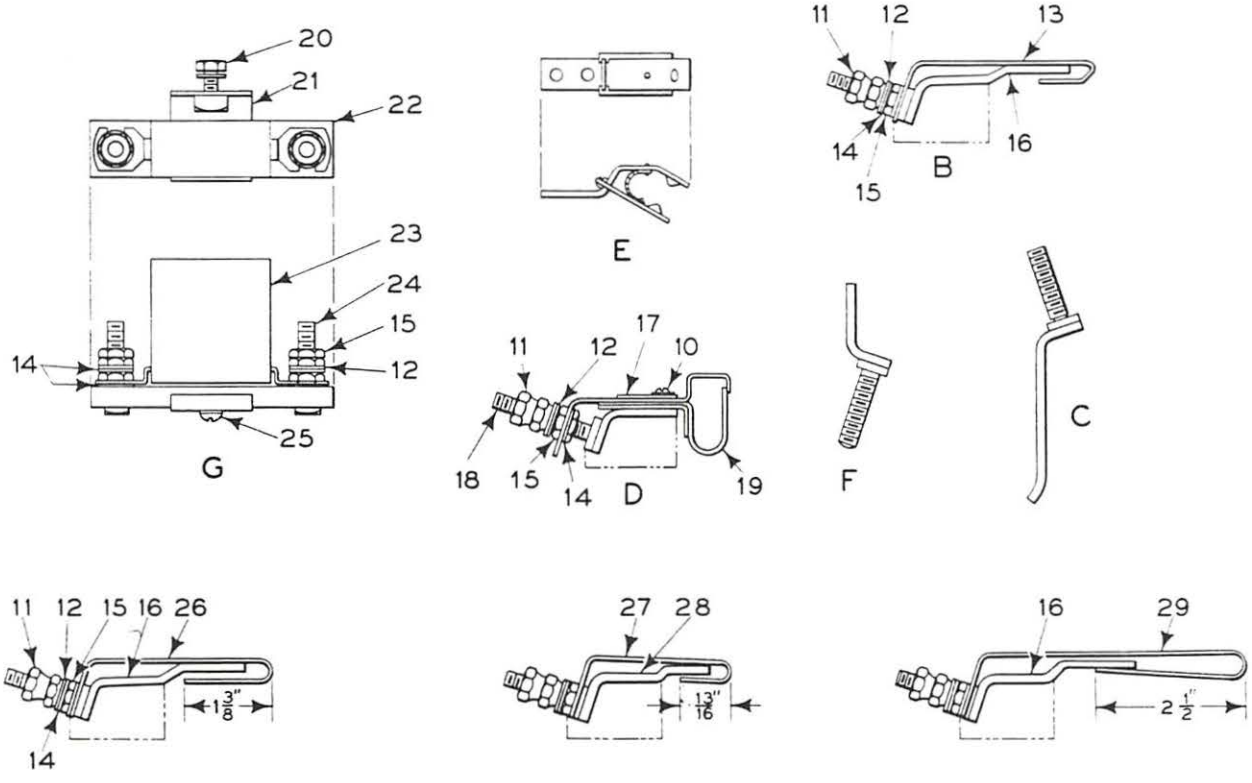
Transformer Groups

(For Replacement Parts Only)

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	**BLOCK,** insulation, for contacts and posts	**P85-529**
2	**SCREW,** 1/4" - 20, for mounting insulation block	**P85-248**
2A	As above, except No. 14-24	**P85-28**
2B	**WASHER,** for above	**P85-178**
3	**WASHER,** for insulation block	**P85-559**
4	**SCREW,** for mounting contacts and posts	**P65-207**
4A	**WASHER,** for above	**P62-196**
4B	**WASHER,** lock, for above	**P85-390**
5	**NUT,** for terminal post	**P65-585**
6	**WASHER,** for terminal post	**P76-108**
7	**POST COMPLETE,** includes strap for mounting on insulation block	**P85-753**
8	**NUT,** for terminal posts	**P76-131**
9	**TRANSFORMER COMPLETE,** Type K 1/2, 60 Hz., .025 kva. Includes bracket for mounting to insulation block. Rating as follows: Pri. 110 (6-92-12) Sec. 14 (2-2-9-1)	**A95-30**
10	**TRANSFORMER,** Type S2, one volt primary, 50-60 Hz., has one 20 volt secondary	**A95-570**
11	**SCREW,** for mounting transformer	**P85-660**
12	**RESISTANCE UNIT,** adjustable, 2.25 ohms maximum	**P85-667**
13	**SCREW,** for lead	**P85-238**
13A	**WASHER,** for above	**P62-196**
14	**WASHER,** lock, for terminal posts	**P62-402**





Contact group.

Contact Group

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**CONTACT GROUP COMPLETE,** for use with automatic switching. Includes two normal and reverse motor-control contacts; one normal and one reverse correspondence contact, and two dependent normal and reverse contacts.	**P85-624**
B	**CONTACT COMPLETE,** motor control	**P85-744**
C	**POST COMPLETE**	**P85-629**
D	**CONTACT COMPLETE,** for point-detector contacts	**P85-626**
E	**ARM COMPLETE,** for correspondence contacts 35466-106R1	~~**P85-75**~~
F	**POST COMPLETE,** for correspondence contacts	**P85-753**
G	**HEATER COMPLETE,** 110 volts, 12 watts, for contact compartment	**P85-670**
1	**WASHER,** for insulation blocks	**P85-559**
2	**SCREW,** for mounting insulation blocks	**P85-248**
2A	**WASHER,** for above	**P85-178**
3	**BLOCK,** insulation, for contacts and posts	**P85-529**
4	**SCREW,** 7/16" long, for fastening contacts to block	**P65-206**
4A	**WASHER,** lock, for above	**P85-390**
5	**SPRING COMPLETE**	**P85-627**
6	**SPRING,** coil	**P85-18**
7	**SCREW,** 5/16" long, for fastening arm to post	**P73-142**
7A	**WASHER,** lock, for above	**P85-390**
8	**SCREW,** 5/8" long, for fastening arm to block	**P65-839**
8A	**WASHER,** lock, for above	**P85-390**
9	**STOP,** for arm Ref. E	**P85-76**
10	**SCREW,** 5/16" long, for fastening spring to post	**P73-142**
10A	**WASHER,** lock, for above	**P85-390**
11	**NUT,** for terminal posts	**P76-131**
12	**WASHER,** for terminal posts	**P76-108**
13	**SPRING,** contact	**P85-576**
14	**WASHER,** lock, for terminal posts	**P62-402**
15	**NUT,** for terminal posts	**P65-585**
16	**TERMINAL POST COMPLETE**	**P85-630**
17	**WASHER,** plate, for contact spring	**P85-69**
18	**TERMINAL POST,** only	**P85-632**

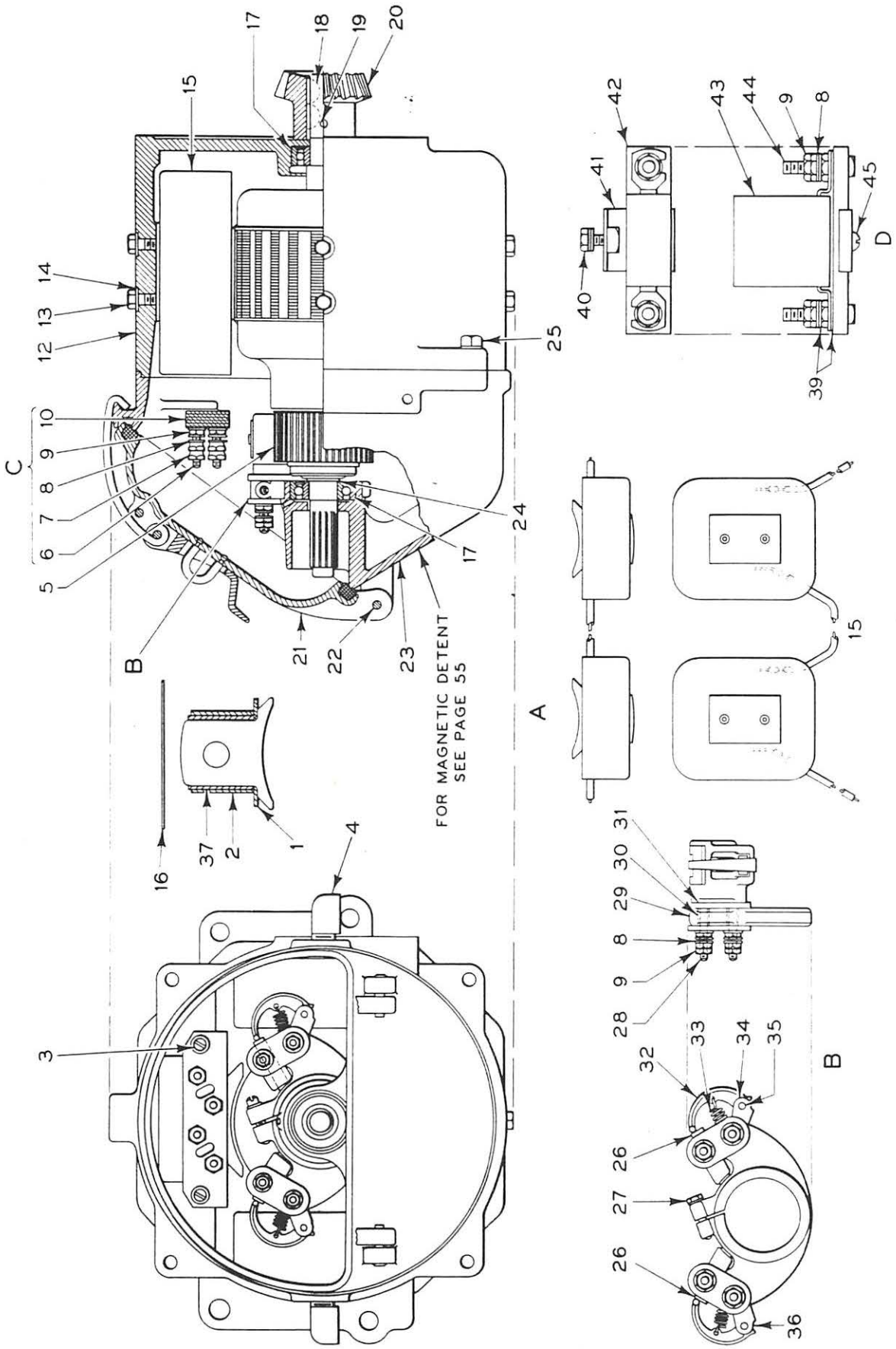
Contact Group

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
19	**SPRING,** contact	P85-625
20	**SCREW,** for mounting resistor	P50-809
20A	**WASHER,** lock, for above	P81-121
21	**BRACKET,** for heater	P85-665
22	**BLOCK,** for heater	P85-617
23	**RESISTOR,** only, 110 volts, 12 watts	P3-228
24	**SCREW,** used as terminal post	P85-10
25	**SCREW,** for fastening block to bracket	P65-200
25A	**WASHER,** lock, for above	P85-390
26	**SPRING,** contact	P85-575
27	**SPRING,** contact	P85-614
28	**TERMINAL POST COMPLETE**	P85-631
29	**SPRING,** contact	P85-577

Memoranda



Switch machine motor.

Switch Machine Motor

For Model 6 Switch Machines

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**MOTOR COMPLETE,** 110-volt, direct-current, high-speed	P85-535
B	**BRUSH HOLDER COMPLETE,** does not include brushes	P85-224
C	**TERMINAL BLOCK COMPLETE**	P85-454
D	**HEATER,** 12 watts, 110 volts, with mounting bracket	P85-670
1	**WASHER,** insulating, for field coil Ref. 15	P85-161
2	**INSULATION,** for field coil Ref. 15	P85-232
3	**SCREW,** for mounting terminal block	P85-303
3A	**WASHER,** for above	P76-108
4	**VENTILATOR**	P81-204
5	**ARMATURE COMPLETE**	P85-538
6	**SCREW,** used as terminal post	P76-100
7	**NUT,** for terminal posts	P76-131
7A	**WASHER,** lock, for above	P85-805
8	**WASHER,** for terminal posts	P76-108
9	**NUT,** for terminal posts	P65-585
10	**BLOCK,** only	P85-212
11	**POLE PIECE COMPLETE**	P85-338
12	**CASE,** only	P85-540
13	**SCREW,** for mounting pole piece	P65-210
14	**WASHER,** lock, for screw Ref. 13	P76-106
15	**FIELD COIL,** set, for motor, consists of two coils and pole pieces	P85-935
16	**WASHER,** fibre, for use between coil and case	P85-307
17	**BEARING,** ball, for each end of motor shaft	P85-573
18	**KEY,** for fastening pinion to shaft	P85-101
19	**PIN,** roll, for fastening pinion to shaft	P85-318
20	**PINION,** bevel, 20 teeth	P85-509
21	**COVER COMPLETE,** with hasp	P85-597
22	**PIN,** roll, for cover	P50-734
23	**BEARING,** front	P85-543
24	**WASHER,** wave, for bearing Ref. 17	P85-182
25	**SCREW,** for fastening front bearing to case	P85-229
25A	**WASHER,** lock, for above	P81-122

Contact Group

For Model 6 Switch Machines

Parts List

Order by catalog number and name shown in bold type

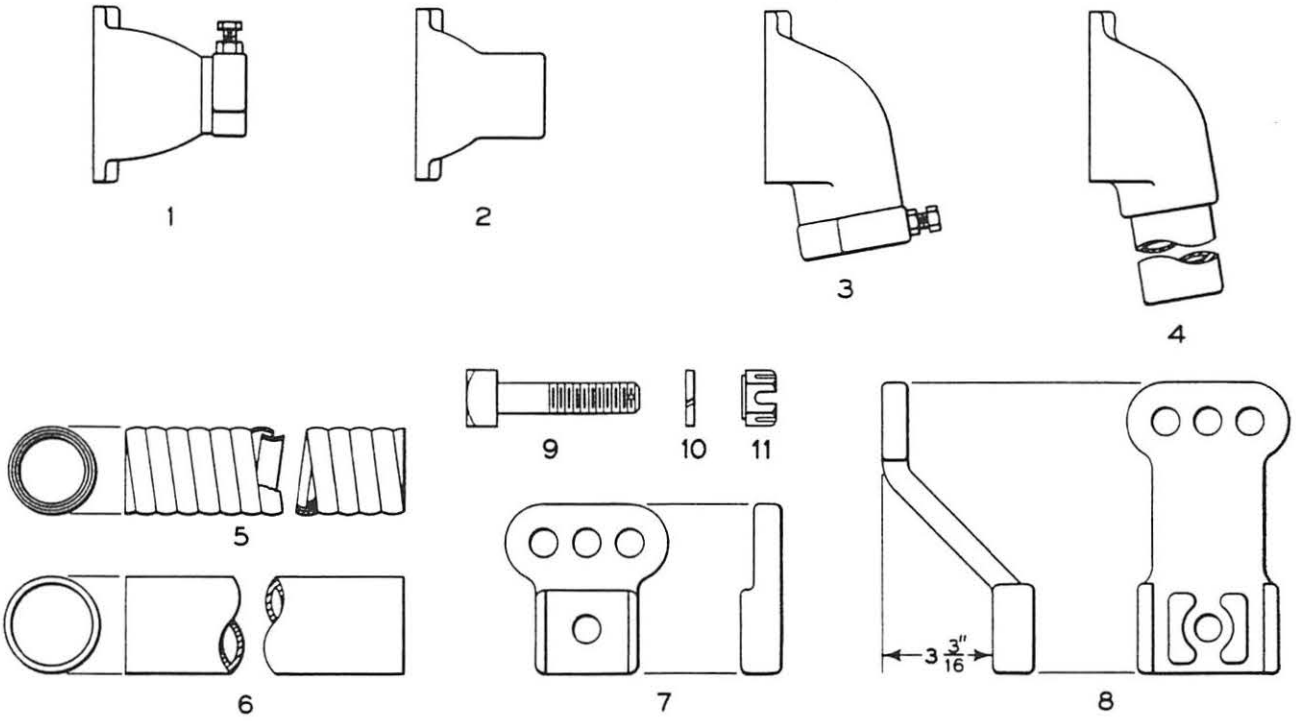
REF.	NAME	CATALOG NUMBER
26	**BRUSH,** right- or left-hand	P85-396
27	**SCREW,** for brush holder	P65-272
27A	**WASHER,** for above	P81-121
28	**SCREW,** used as terminal post	P85-138
29	**YOKE,** for brush holder	P85-222
30	**BUSHING,** insulation, for screw Ref. 28	P85-429
31	**LINK,** for brush holder	P85-394
32	**ARM,** for brush holder	P85-213
33	**SPRING,** for arm	P85-215
34	**HOLDER,** right-hand	P85-375
35	**PIN,** for arm Ref. 32 and holders Refs. 34 and 36	P85-214
36	**HOLDER,** left-hand	P85-374
37	**INSULATION,** 1/16" thick	P85-291
37A	As above, except 1/32" thick	P85-290
38	**RESISTOR,** only, 15 watts	P85-929
39	**WASHER,** lock, for terminal posts	P62-402
40	**SCREW,** for mounting resistor	P50-809
40A	**WASHER,** lock, for above	P81-121
41	**BRACKET,** for heater	P85-665
42	**BLOCK,** for heater	P85-617
43	**RESISTOR,** only ,110 volts, 12 watts	P3-228
44	**SCREW,** used as terminal post	P85-10
45	**SCREW,** for fastening block to bracket	P65-200
45A	**WASHER,** lock, for above	P85-390

Coupling and Conduit

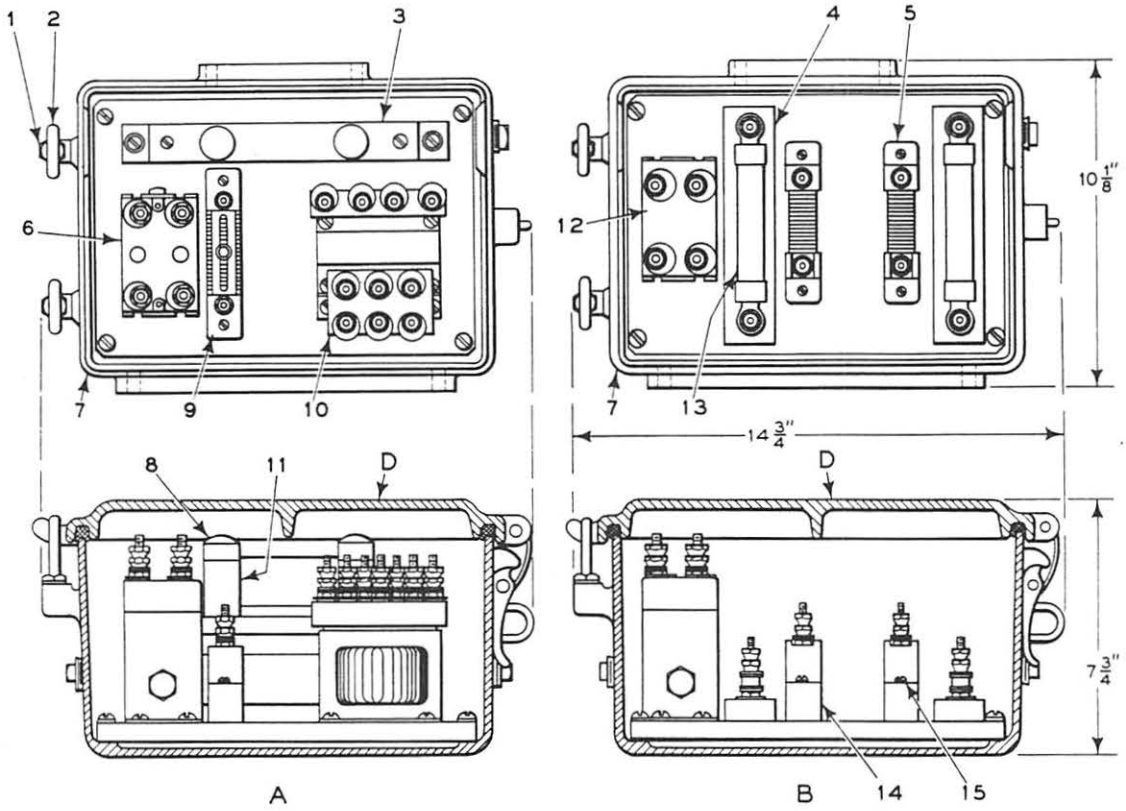
For Model 6 Switch Machines

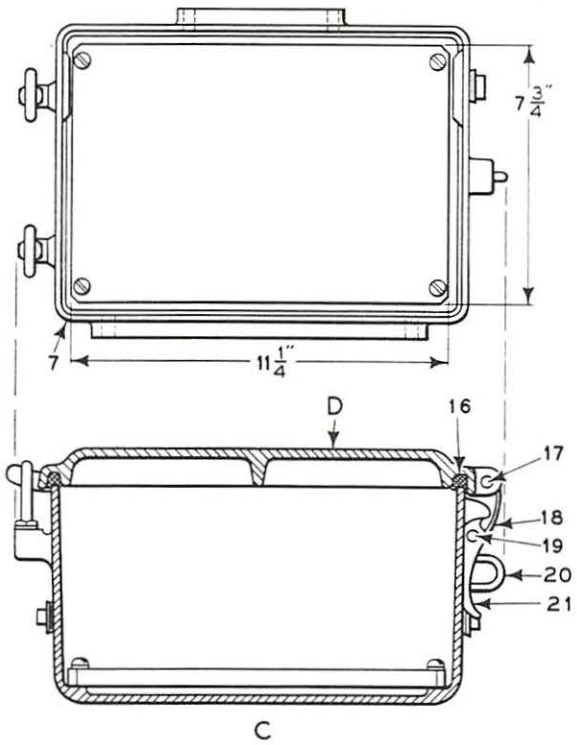
Parts List

Order by catalog number and name shown in bold type



REF.	NAME	CATALOG NUMBER
1	**COUPLING,** straight, for 2" flexible conduit	**A85-503**
2	**COUPLING,** straight, for 2 3/8" I.D. rubber conduit	**A85-500**
3	**COUPLING,** offset, for 2" flexible conduit	**A85-502**
4	**COUPLING,** offset, for 2 3/8" I.D. rubber conduit	**P85-932**
5	**CONDUIT,** 2" flexible, recommended length 3' — specify length required	**A85-530**
6	**CONDUIT,** 2 3/8" I.D. solid rubber, recommended length 3' — specify length required	**A85-535**
7	**COUPLING,** for throw bar	**P85-933**
8	**COUPLING,** offset, for throw bar	**P85-934**
9	**BOLT,** for fastening coupling to throw bar	**P85-77**
10	**WASHER,** lock, for above	**P85-117**
11	**NUT,** for above	**P85-552**





Junction boxes.

Junction Boxes

For Model 6 Switch Machines

Note: For resistors, transformers and rectifiers, see assemblies catalog.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**JUNCTION BOX COMPLETE,** includes the following: Rectifier, a-c input, 2 volts, 50/100 Hz., d-c output 1.5 volts, 0.30 amps. Resistor, fixed maximum 2.5 ohms maximum Resistor, adjustable, 16 ohms maximum Transformer, Type S1, 60 Hz., 0.040 kva., Pri. 115 (5-100-10) Sec. 12.5 (.5-9-1-1-1)	**P85-42**
B	**JUNCTION BOX COMPLETE,** includes the following: Rectifier a-c input 2 volts, 50/100 Hz., d-c output 5.0 volts, 0.20 amps. Fuse blocks with 6.25 ampere fusetrons Resistors, fixed, 2.0 ohms maximum	**P85-41**
C	**JUNCTION BOX COMPLETE,** with board only for mounting apparatus as required	**P85-43**
D	**COVER COMPLETE,** with gasket	**P85-634**
1	**NUT,** for eyebolt	**P85-413**
2	**EYEBOLT,** for cover	**P85-434**
3	**RESISTOR,** fixed, 2.5 ohms maximum	**P85-666**
4	**BLOCK,** fuse	**P85-70**
5	**RESISTOR,** fixed, 2.0 ohms maximum. For other resistors, see Assemblies Catalog, Section 3	**A3-141**
6	**RECTIFIER,** a-c input 2 volts, 50/100 Hz., d-c output 1.5 volts 0.30 amps	**A53-596**
7	**CASE,** only	**P85-55**
8	**BUTTON,** for terminal posts	**P3-127**
9	**RESISTOR,** adjustable, 16 ohms maximum. For other resistors, see Assemblies Catalog, Section 3	**A3-161**
10	**TRANSFORMER,** Type S1, 60 Hz., 0.060 kva., Pri. -115 (5-100-10) Sec. 12.5 (.5-9-1-1-1). For other transformers, see Assemblies Catalog, Section 95.	**A95-510**
11	**SHIELD,** for terminal posts	**P3-154**
12	**RECTIFIER,** a-c input 2 volts, 50/100 Hz., d-c output 5.0 volts, 0.20 amps	**A53-597**
13	**FUSETRON,** for references see Assemblies Catalog, Section 3	
14	**BRACKET,** for supporting resistor	**P85-93**
15	**SCREW,** for mounting resistor	**P85-35**
16	**GASKET,** 3'-6" long. Specify number of feet required	**P85-460**
17	**PIN,** for fastening strap to cover	**P30-151**
18	**STRAP,** for hasp	**P85-73**
19	**PIN,** for fastening strap to hasp	**P85-32**
20	**STAPLE,** for hasp	**P81-141**
21	**HASP,** for cover	**P85-56**

CATALOG SECTION P85
PARTS LIST
Electric Switch Machines
MODEL 55 SERIES

FOR ASSEMBLIES, SEE CATALOG SEC. 85–2

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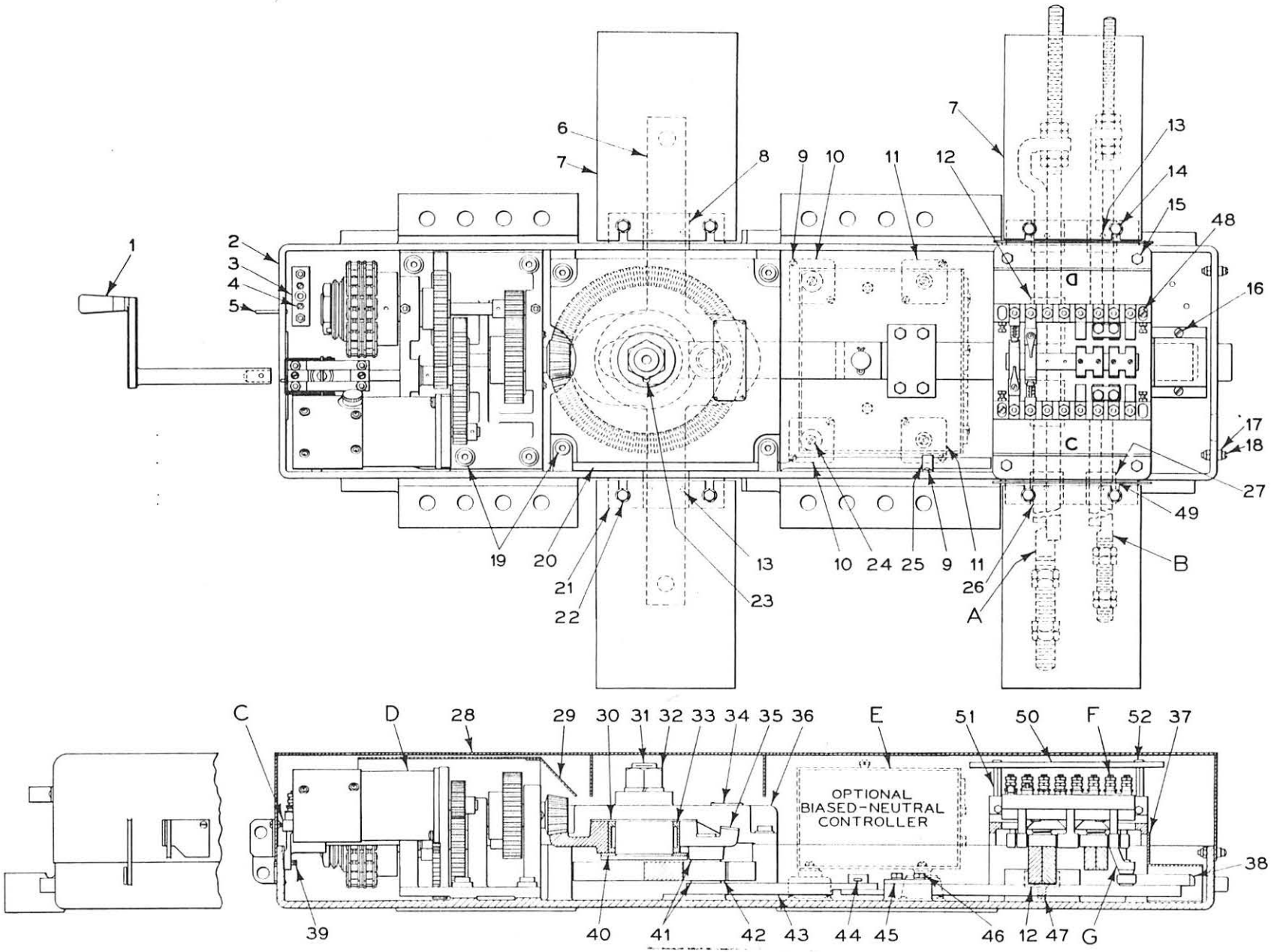


Models 55E and 55G switch machines.

Models 55E and 55G Switch Machines

Order by catalog number and name shown in bold type

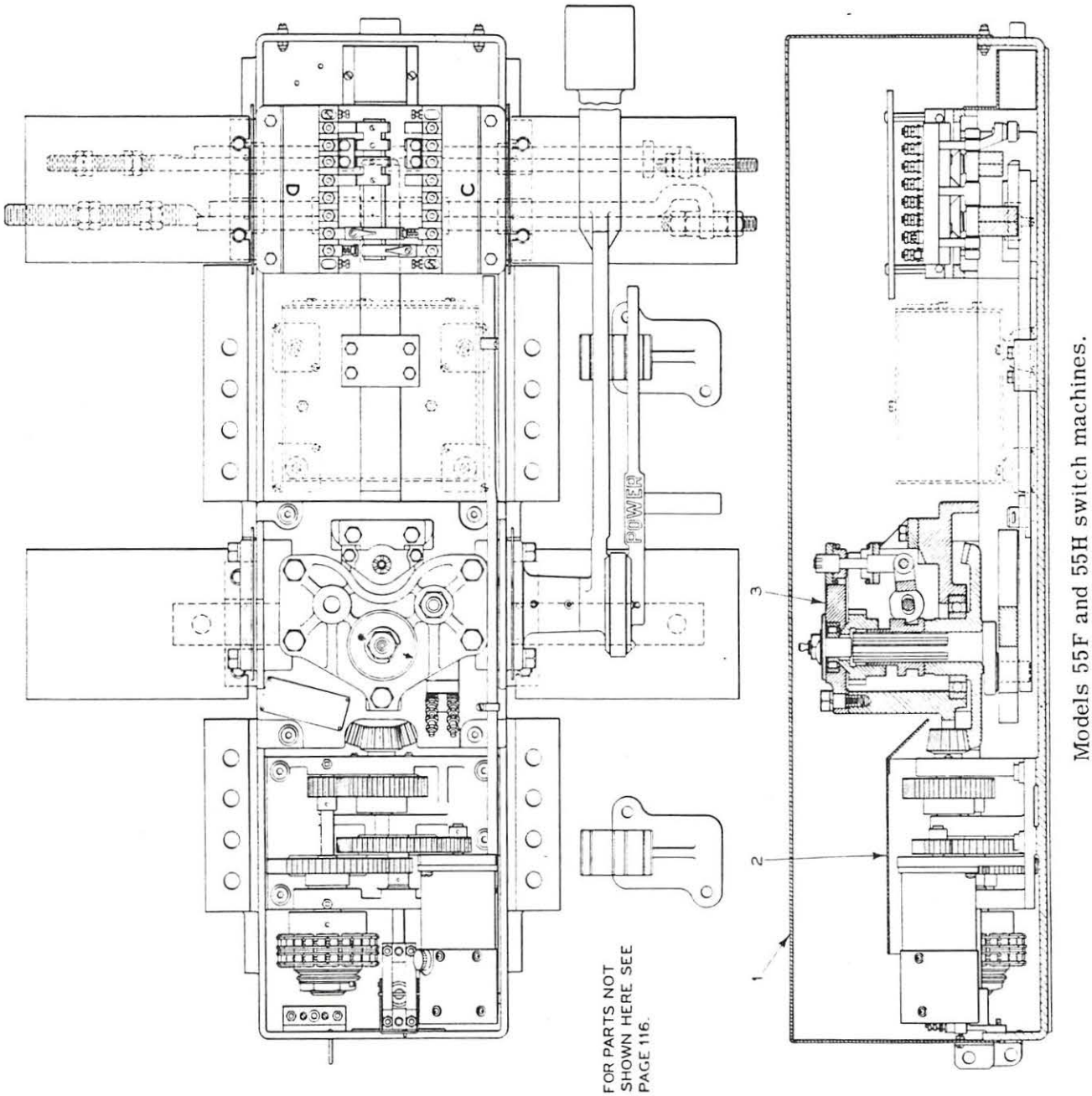
REF.	NAME	CATALOG NUMBER
A	LOCK ROD COMPLETE, for references see page 143	
B	DETECTOR ROD COMPLETE, for references see page 143	
C	BRACKET COMPLETE, for references see page 123	
D	GEAR UNIT COMPLETE, for references see page 135	
E	CONTROLLER COMPLETE, for references see pages 126 and 130	
F	CONTACT GROUP COMPLETE, for references see page 123	
G	MOVEMENT COMPLETE, for references see page 123	
1	CRANK, for hand operation	P85-1178
2	BASE, only	P85-1124
3	TERMINAL BLOCK COMPLETE	P85-1118
4	SCREW, for mounting terminal block	P62-216
5	STAPLE, for cover	P85-312
6	THROW BAR	P85-1115
7	GUARD, for throw bar also for lock and detector rods	P85-1138
8	BEARING, for throw bar	P85-1084
9	SCREW, for shock mounts also for hanger Ref. 25	P50-253
9A	WASHER, lock, for above	P62-401
10	SHOCK MOUNT, 6-1/4 - 12.5 lbs. for use in position shown	P85-1165
11	SHOCK MOUNT, 10 - 20 lbs. for use in position shown	P85-1166
12	BEARING, for lock rod WEAR PLATES	P85-1016
13	PIN, for lock and detector rod bearings also for bearing Ref. 21	P85-1024
14	SCREW, for guards on lock and detector rods	P73-119
14A	WASHER, lock, for above	P85-221
15	SCREW, for mounting contact group	P85-1046
15A	WASHER, lock, for above	P81-122
16	SCREW, for guard on cam bar	P85-238
16A	WASHER, lock, for above	P62-401
17	BUSHING, for cover	P85-1047
18	SCREW, for bushing	P85-527
18A	NUT, for above	P71-356
19	SCREW, for mounting gear unit and plate Ref. 36	P85-1055
20	WIRE CHASE	P85-1198
21	PLATE COMPLETE, for throw bar	P85-1087
22	SCREW, for mounting throw bar guards	P85-229
22A	WASHER, for above	P85-221

Models 55E and 55G Switch Machines

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
23	PIN, for bearing	P85-1025
24	SCREW, for mounting controller	P85-1022
24A	WASHER, lock, for above	P81-121
25	HANGER, for wire chase	P85-1069
26	BEARING, for lock rod . . wear plate	P85-1015
27	BEARING, for detector rod	P85-1017
28	COVER COMPLETE	P85-1103
29	COVER, for gear unit	P85-1117
30	SHIM, for main gear	P85-1171
31	BEARING, for main gear	P85-1114
32	NUT, for bearing	P85-1027
32A	WASHER, lock, for above	P91-230
33	BEARING, roller, for main gear	P85-1127
34	NAME PLATE	P87-148
34A	SCREW, for above	P85-796
35	GEAR, main	P85-1112
36	PLATE	P85-1175
37	GUARD, for cam bar	P85-1139
38	CAM BAR COMPLETE	P85-1100
39	SCREW, for bracket	P85-1019
40	WASHER, for bearing	P85-1036
41	WASHER, for bearing	P85-1037
42	BEARING, roller, for main gear	P85-1131
43	LINK, for attaching to cam bar	P85-1030
44	PIN, cotter, for link	P85-971
45	PLATE, for cam bar	P85-1023
46	SCREW, for plate	P76-204
46A	WASHER, lock, for above	P81-122
47	SCREW, for bearing Ref. 12	P85-1039
48	SCREW, for mounting contact group	P85-248
48A	WASHER, for above	P85-178
49	GUARD, snow	P85-1344
50	SHIELD, plastic, for contact group	P85-1343
51	STUD, for shield	P85-1342
51A	SPRING, for above	P85-1341
52	SCREW, for shield	P62-178

Memoranda



FOR PARTS NOT SHOWN HERE SEE PAGE 116.

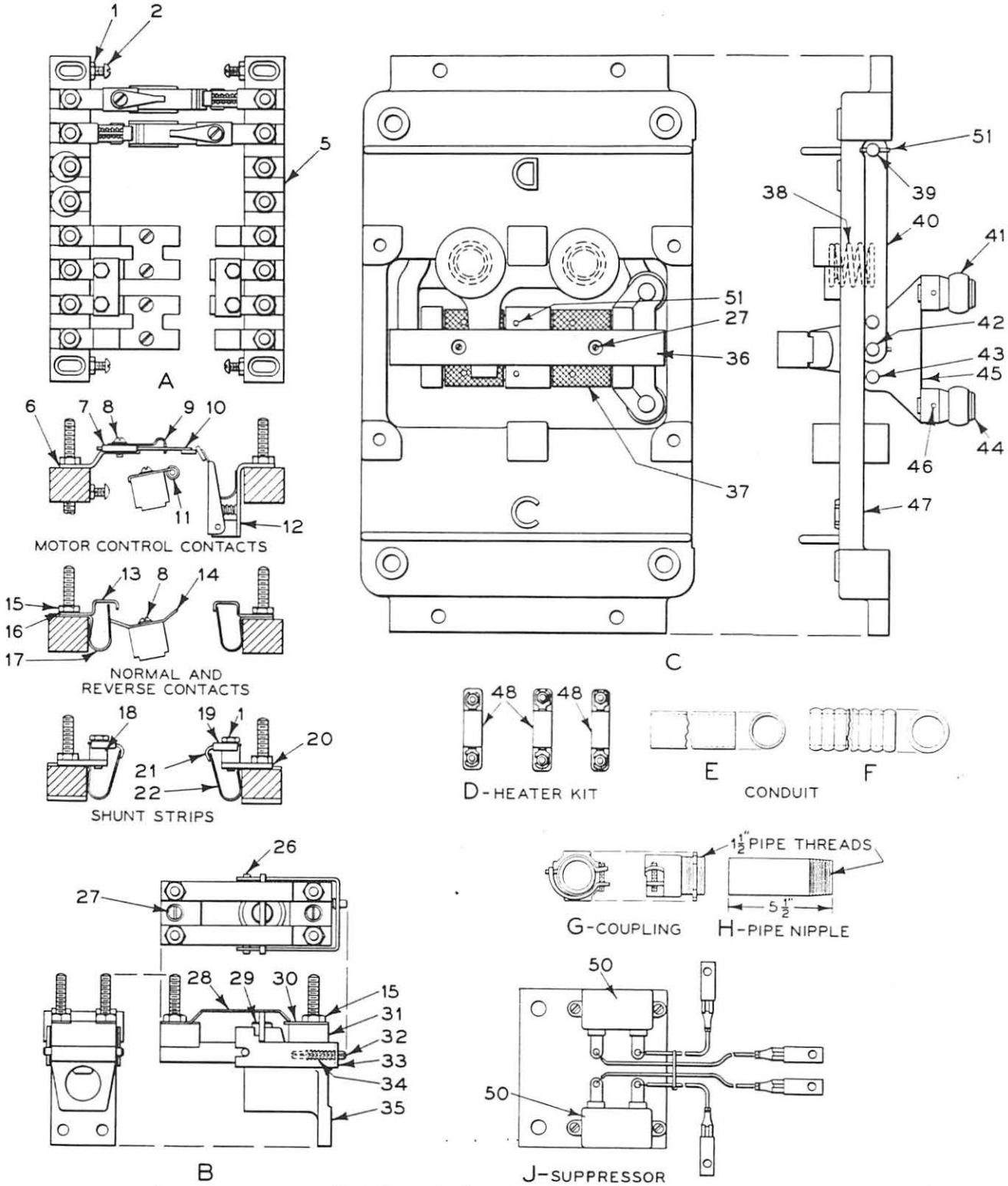
Models 55F and 55H switch machines.

Models 55F and 55H Switch Machines

For parts not listed here, see pages 116 thru 118

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	COVER COMPLETE	P85-1104
2	COVER, for gear train	P85-1117
3	MECHANISM, dual-control, for references see page 138	



Detail parts for switch machines.

Detail Parts for Switch Machines

Order by catalog number and name shown in bold type

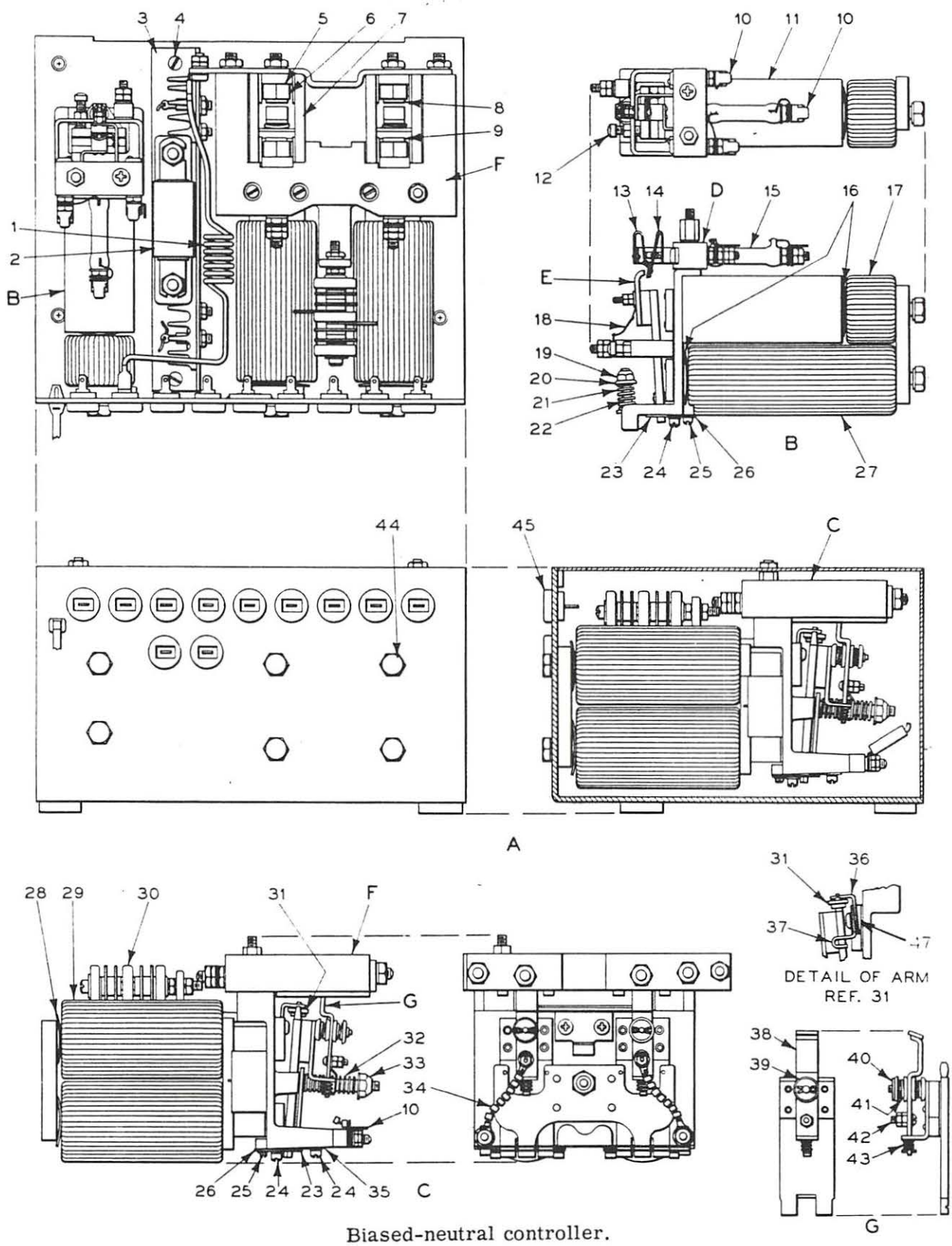
REF.	NAME	CATALOG NUMBER
A	CONTACT GROUP COMPLETE, having two normal, two reverse, two motor-control contacts and two shunt-strips, for Model 55G and 55H d-c switch machines with biased-neutral controller.	P85-1145
A1	As above, except for Model 55E and 55F switch machines without biased neutral controllers and Models 55G and 55H a-c switch machines with biased-neutral controllers.	P85-1146
B	BRACKET COMPLETE, crank contact with latch-out feature	P85-1095
C	MOVEMENT COMPLETE.	P85-1152
D	HEATER KIT, includes three 110-volt heaters, and all hardware for controller, motor and point-detector compartment of Models 55G and 55H switch machines	P85-1000
D1	As above, except includes two 110-volt heaters, and all hardware, for motor and point-detector compartment of Models 55E and 55F switch machines	P85-1002
E	CONDUIT, 1-7/8" I. D. solid rubber, length 3 feet, for use with nipple Ref. H.	A85-520
F	CONDUIT, 1-1/2" flexible metal, length 3 feet, for use with coupling Ref. G.	A85-868
G	COUPLING, 1-1/2" pipe thread, for 1-1/2" flexible metal conduit Ref. F.	A85-866
H	PIPE NIPPLE, 1-1/2" pipe thread, for 1-7/8" I. D., rubber conduit Ref. E.	P85-1003
J	SUPPRESSOR, arc, for 110 volt machines without controller	P85-1346
1	NUT, for screw Ref. 2	P76-129
2	SCREW, adjusting	P65-208
5	BLOCK, insulation, for contacts	P85-1136
6	SUPPORT, for motor-control contacts	P85-1085
7	WASHER, for adjuster	P85-217
8	SCREW, for adjuster, and finger Ref. 14	P65-198
8A	WASHER, lock, for above	P62-402
9	ADJUSTER, for finger Ref. 10.	P85-355
10	FINGER COMPLETE	P85-1148
11	ARM COMPLETE	P85-869
12	FINGER COMPLETE	P85-1147
13	STOP, for spring Ref. 17	P85-1082
14	FINGER, only	P85-755
15	NUT, base, for terminal posts.	P62-333

Detail Parts for Switch Machines

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
16	WASHER, for base nut	P50-157
17	SPRING, only	P85-1150
18	INSULATOR, for stops	P65-557
19	STRIP, shunt	P85-1054
20	SUPPORT, for stops	P85-1086
21	STOP, for springs Ref. 22	P85-1083
22	SPRING, only	P85-1151
26	PIN, roll	P85-1053
27	SCREW, for mounting blocks, Refs. 31 and 36	P62-216
28	SPRING, only	P85-1135
29	PLUNGER COMPLETE	P85-1199
30	FINGER, only	P85-1149
31	BLOCK COMPLETE	P85-1156
32	PIN, roll	P85-318
33	LATCH, only.	P85-1064
34	SPRING, coil.	P85-1032
35	BRACKET, only	P85-1196
36	BLOCK, contact	P85-484
37	ROLLER	P85-1143
38	SPRING	P85-200
39	PIN, for yoke	P85-1052
40	YOKE, for spring.	P85-1142
41	ROLLER	P85-919
42	PIN, for yoke	P85-1051
43	PIN, for rollers	P85-1050
44	STUD, for rollers	P85-284
45	YOKE, only.	P85-1134
46	PIN, roll, for studs	P85-1355
47	PLATE, only	P85-1174
48	RESISTOR, only, 110 volt	P3-235
49	WRENCH, for adjusting clutch	P85-974
50	CAPACITOR, for arc suppressor	P85-1345
51	PIN, roll, for yoke Ref. 45.	P62-238

Memoranda



Biased-neutral controller.

Biased-Neutral Controller

Order by catalog number and name shown in bold type

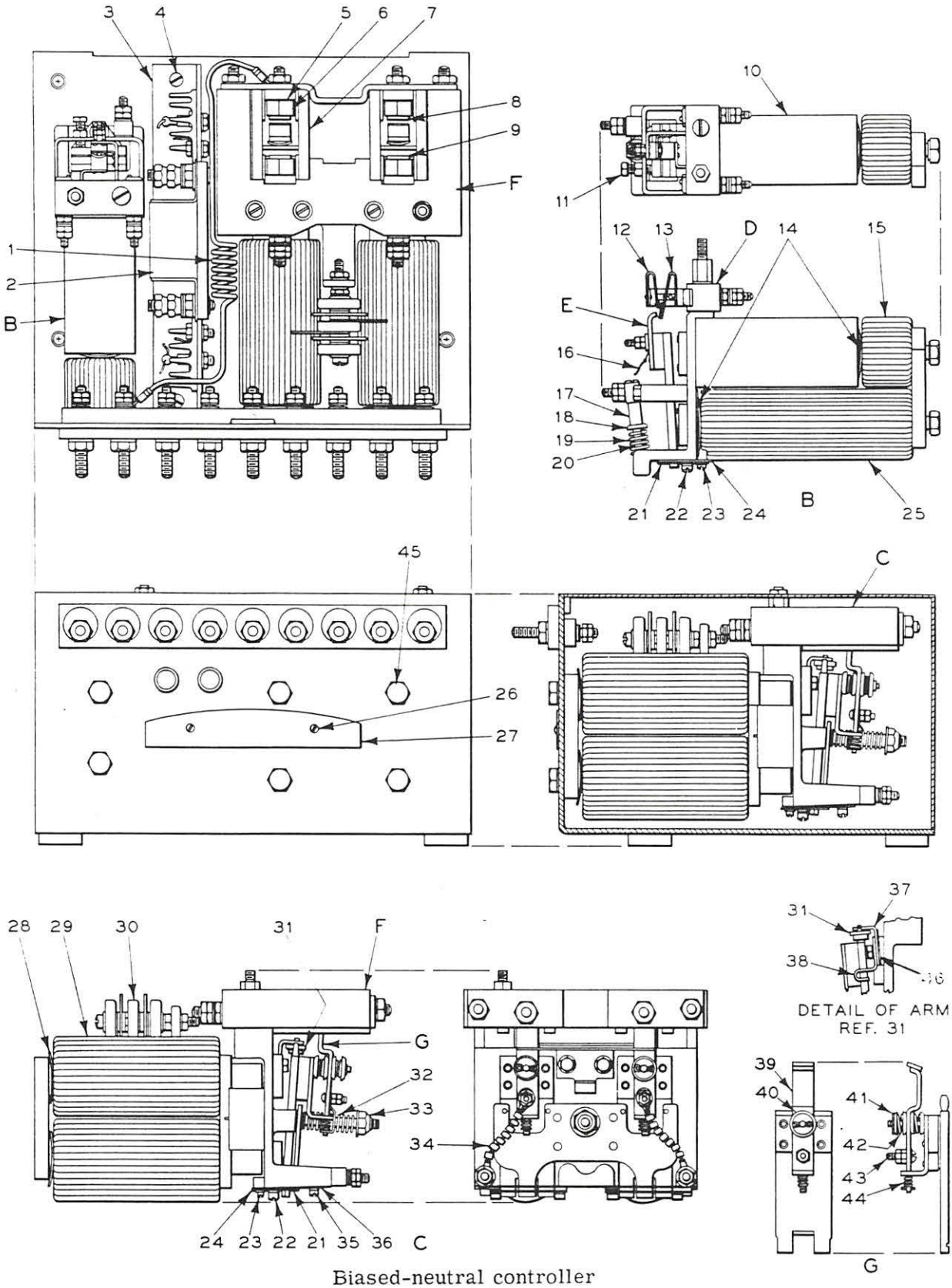
REF.	NAME	CATALOG NUMBER
A	BIASED-NEUTRAL CONTROLLER COMPLETE, for 10 or 24 volt d-c, control and 24 or 110 volt d-c operation	P85-1185
A1	As above, except for 10 or 24 volt d-c control and 110 volt a-c operation	P85-1184
B	OVERLOAD RELAY COMPLETE, for 10 or 24 volt d-c control	P85-1094
C	CONTACTOR COMPLETE, for 10 or 24 volt d-c. control	P85-1090
D	BLOCK COMPLETE, for overload relay, includes contacts and resistor	P85-1159
E	ARMATURE COMPLETE, for overload relay	P85-432
F	CONTACT BLOCK COMPLETE, includes contacts and magnets	P85-1157
G	ARMATURE COMPLETE, for contactor	P85-433
1	CONNECTOR COMPLETE for use with 24 volt operation	P85-1099
1A	As above, except for 110 volt a-c. or d-c. operation	P85-1098
2	RESISTOR, only, 14 watts, 800 ohms	P3-235
3	RECTIFIER COMPLETE, for 110 volt, a-c. operation only	A53-337
4	SCREW, for mounting rectifier	P85-1021
4A	WASHER, lock, for above	P62-401
5	WASHER, shim, .010" thick	P85-185
6	MAGNET, for contacts	P85-896
7	INSULATION, for contacts	P85-842
8	CONTACT COMPLETE, short	P85-452
9	CONTACT COMPLETE, long	P85-451
10	TERMINAL, only	P85-1040
11	SLUG, for overload relay	P85-978
12	SCREW, for overload relay	P85-293
13	SUPPORT COMPLETE, with spring and stop	P85-756
14	SUPPORT COMPLETE	P85-757
15	RESISTOR, 12 watts, 50 ohms	P85-1058
16	WASHER, spring, for coils	P62-158
17	COIL, for overload relay	P85-1076
18	CONNECTOR COMPLETE	P85-446
19	NUT, for adjustment	P76-333
20	WASHER, for nut Ref. 19	P85-581
21	SPRING, for overload relay	P85-198
22	SCREW, for adjustment	P85-350

Biased-Neutral Controller

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
23	PLATE, armature retaining	P62-473
24	SCREW, for plates Refs. 23 and 26	P85-870
24A	WASHER, lock, for above	P62-402
24B	WASHER, strap, for above	P62-260
25	SCREW, for plate, Ref. 26	P62-445
25A	WASHER, lock	P65-730
26	PLATE, armature bearing	P85-873
27	COIL, for overload relay	P85-1074
28	WASHER, spring, for coils	P62-163
29	COIL, for contactor	P85-1073
30	RECTIFIER, for contactor	A53-335
31	ARM COMPLETE	P85-428
32	SPRING, for arm	P85-1029
33	NUT, elastic stop	P71-356
34	CONNECTOR	P85-445
35	PLATE, retaining	P85-874
36	BRACKET, for arm	P85-554
37	BRACKET, for arm	P85-553
38	FINGER, COMPLETE, for armature	P85-835
39	WASHER, cup for spring Ref. 41	P85-341
40	WASHER, for end of stud	P85-201
41	SPRING, for armature	P85-176
42	SCREW, for connector	P85-308
42A	NUT, for above	P85-924
42B	WASHER, lock for above	P65-730
43	SPRING, for finger Ref. 38	P85-197
44	SCREW, for mounting contactor and overload relay	P85-245
44A	WASHER, lock, for above	P65-729
45	BUSHING, with terminal	P85-1018
47	SHIM, for bracket Ref. 36	P85-812

Memoranda



Biased-neutral controller
(For replacement parts only).

Biased-Neutral Controller
(For Replacement Parts Only)

Order by catalog number and name shown in bold type

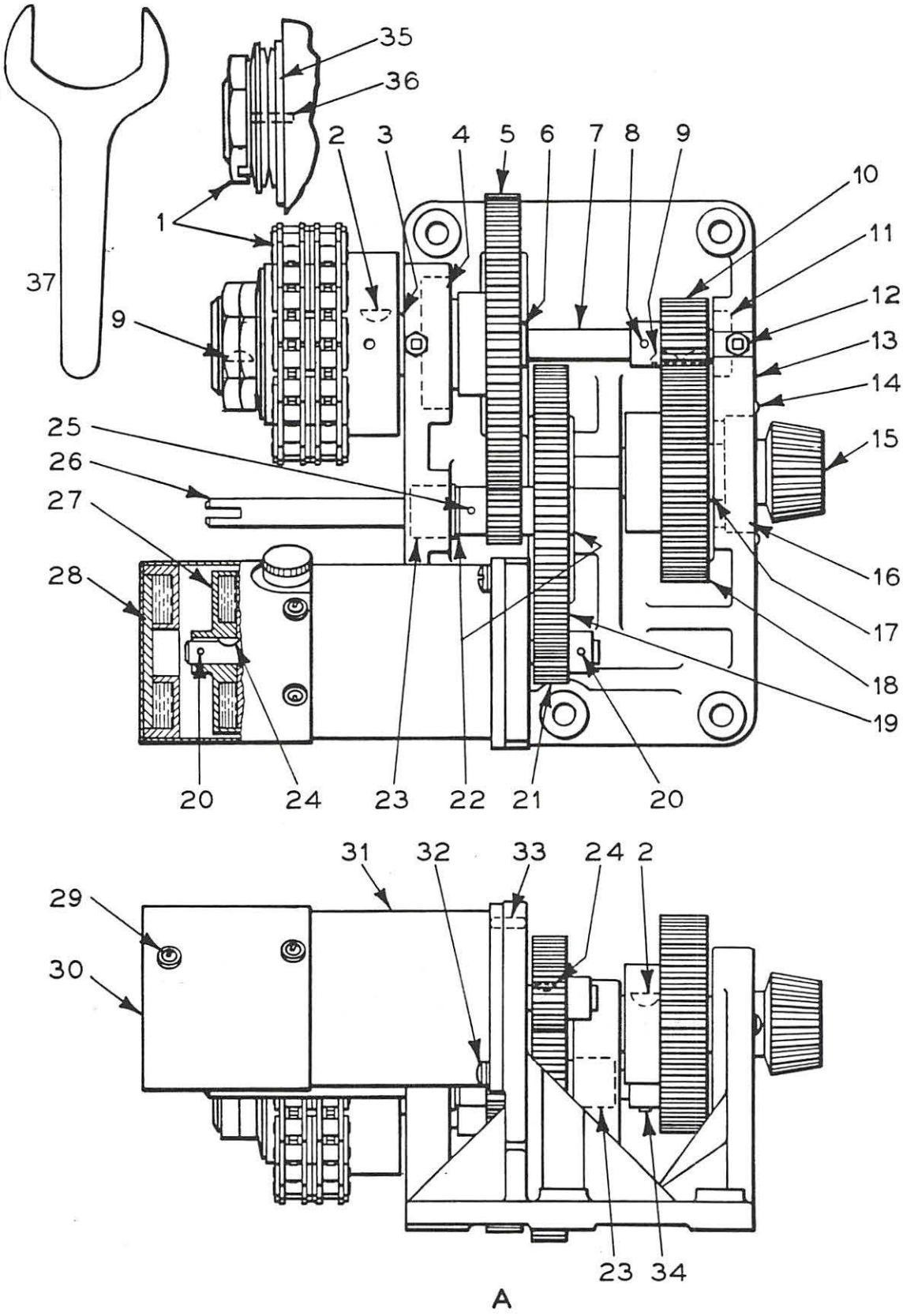
REF.	NAME	CATALOG NUMBER
B	OVERLOAD RELAY COMPLETE, for 10-12 volt control	P85-1092
B1	As above, except for 24 volt control	P85-1093
C	CONTACTOR COMPLETE, for 10-12 volt control	P85-1088
C1	As above, except for 24 volt control	P85-1089
D	BLOCK COMPLETE, for overload relay, includes contacts	P85-785
E	ARMATURE COMPLETE, for overload relay	P85-342
F	CONTACT BLOCK COMPLETE, includes contacts and magnets	P85-1157
G	ARMATURE COMPLETE, for contactor	P85-433
1	CONNECTOR COMPLETE, for use with 24 volt operation	P85-1096
1A	As above, except for 110 volt operation	P85-1097
2	RESISTOR, only, 14 watts, 800 ohms	P3-235
3	RECTIFIER COMPLETE, for 110 volt, a-c. operation only	153-337
4	SCREW, for mounting rectifier	P65-235
4A	WASHER, lock, for above	P62-401
5	WASHER, shim .010" thick	P85-185
6	MAGNET, for contacts	P85-896
7	INSULATION for contacts	P85-842
8	CONTACT COMPLETE, short	P85-452
9	CONTACT COMPLETE, long	P85-451
10	SLUG, for overload relay	P85-978
11	SCREW, for overload relay	P85-136
12	SUPPORT COMPLETE, with spring and stop	P85-756
13	SUPPORT COMPLETE	P85-757
14	WASHER, spring, for coils	P62-158
15	COIL, for overload relay	P85-1075
16	CONNECTOR COMPLETE	P85-446
17	NUT, for adjustment	P85-174
18	WASHER, for nut Ref. 17	P85-581
19	SPRING, for overload relay	P85-198
20	SCREW, for adjustment	P85-350
21	PLATE, armature retaining	P62-473
22	SCREW, for plates, Refs. 21 and 24	P85-870
22A	WASHER, lock, for above	P62-402
22B	WASHER, strap, for above	P62-260
23	SCREW, for plate Ref. 24	P62-445
23A	WASHER, lock, for above	P65-730

Biased-Neutral Controller
(For Replacement Parts Only)

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
24	PLATE, armature bearing	P85-873
25	COIL, for use with 10-12 volt control	P85-367
25A	As above, except for 24 volt control	P85-368
26	SCREW, for mounting name plate	P73-411
27	NAME PLATE, for controller	P85-139
28	WASHER, spring, for coils	P62-163
29	COIL, for 10-12 volt control	P85-365
29A	As above, except for 24 volt control	P85-366
30	RECTIFIER, for contactor	A53-335
31	ARM COMPLETE, for contactor	P85-428
32	SPRING, for arm	P85-1029
33	NUT, elastic stop	P71-356
34	CONNECTOR	P85-445
35	SCREW, for retaining plate	P65-198
35A	WASHER, lock, for above	P62-402
36	PLATE, retaining	P85-874
37	BRACKET, for arm	P85-554
38	BRACKET, for arm	P85-553
39	FINGER COMPLETE, for armature	P85-835
40	WASHER, cup for spring, Ref. 42	P85-341
41	WASHER, for end of stud	P85-201
42	SPRING, for armature	P85-176
43	SCREW, for connector	P85-308
43A	NUT, for above	P85-924
43B	WASHER, lock, for above	P65-730
44	SPRING, for finger Ref. 39	P85-197
45	SCREW, for mounting contactor and overload relay	P85-245
45A	WASHER, lock, for above	P65-729
46	SHIM, for bracket Ref. 37	P85-812

Memoranda



Gearing for switch machines.

Gearing for Switch Machines

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	GEAR ASSEMBLY COMPLETE, for 110 volt operation	P85-1071
A1	As above, except for 24 volt operation	P85-1072
1	CLUTCH COMPLETE	P85-1193
	KIT, conversion, for converting older style clutch to latest design. Includes tab washer, two friction washers and spacer	P85-1347
2	KEY, for clutch and gears	P85-1011
3	SLEEVE, for clutch, includes two bushings for shaft Ref. 7	P85-1028
3A	BUSHING, for above	P85-1044
4	BEARING, ball, for clutch	P85-1130
5	GEAR, only	P85-1108
6	RING, retaining, for gear	P85-1042
7	SHAFT, only	P85-1120
8	SCREW, for shaft	P85-1057
9	KEY, woodruff, for pinion and old style clutch	P85-1179
10	PINION, for 110 volt machines	P85-1110
10A	As above, except for 24 volt machines	P85-1111
11	BEARING, ball, for shaft	P85-1128
12	SCREW, for bearing	P85-1045
12A	NUT, for above	P85-12
13	FRAME, only	P85-1182
14	SCREW, for bearing	P65-200
14A	WASHER, for above	P85-111
15	PINION, only	P85-1119
16	BEARING, ball, for pinion	P85-1129
17	SPACER, for bearing	P85-1091
18	GEAR, for 110 volt machines	P85-1106
18A	As above, except for 24 volt machines	P85-1107
19	GEAR AND PINION	P85-1137
20	PIN, roll, for shaft	P85-19
21	PINION, only	P85-1109
22	WASHER, thrust	P85-1038
23	BEARING, roller, for shaft	P85-1126
24	KEY, for magnet Ref. 27 and pinion Ref. 21	P85-1012
25	PIN, roll, for shaft	P50-162
26	SHAFT, only	P85-1121
27	MAGNET COMPLETE	P85-1048

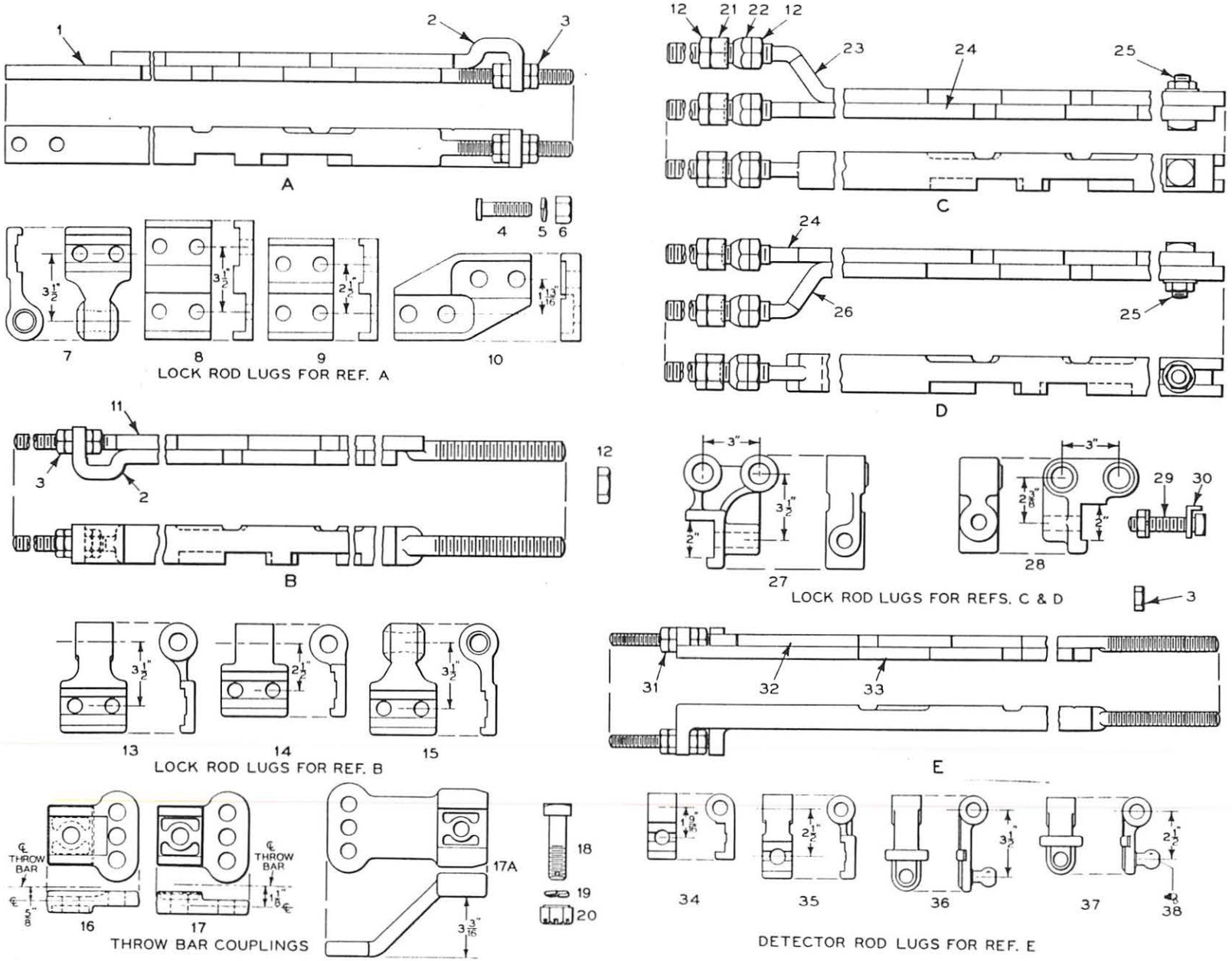
Gearing for Switch Machines

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
28	MAGNET COMPLETE	P85-1049
29	SCREW, for tube	P65-235
29A	WASHER, for above	P62-401
30	TUBE, for magnets	P85-1066
31	MOTOR, only, for 110 volt machines	P85-1169
31A	As above, except for 24 volt machines	P85-1170
For Motors Figs. 31 &31A	FIELD ASSEMBLY, for 110 volt machines	P85-1062
	As above, except for 24 volt machines	P85-1063
	ARMATURE ASSEMBLY, with ball bearings, for 110 volt machines	P85-1122
	As above, except for 24 volt machines	P85-1123
	BEARING, ball, for all machines	P85-1133
	HEAD, brush end, for 110 volt machines	P85-1080
	As above, except for 24 volt machines	P85-1081
	HEAD, pinion end, for all machines	P85-1079
	BRUSH, for 110 volt machines	P85-1163
	As above, except for 24 volt machines	P85-1162
	CAP, brush, for all machines	P85-1164
	BOLT, for case, for all machines	P85-1155
32	SCREW, for mounting motor	P85-1084
32A	WASHER, lock, for above	P76-106
33	PIN, dowel, for motor	P85-1026
34	SCREW, for gear	P85-1056
35	DISC, friction	P85-1303
36	KEY, rectangular, for clutch	P85-1340
37	WRENCH, for adjusting clutch	P85-974

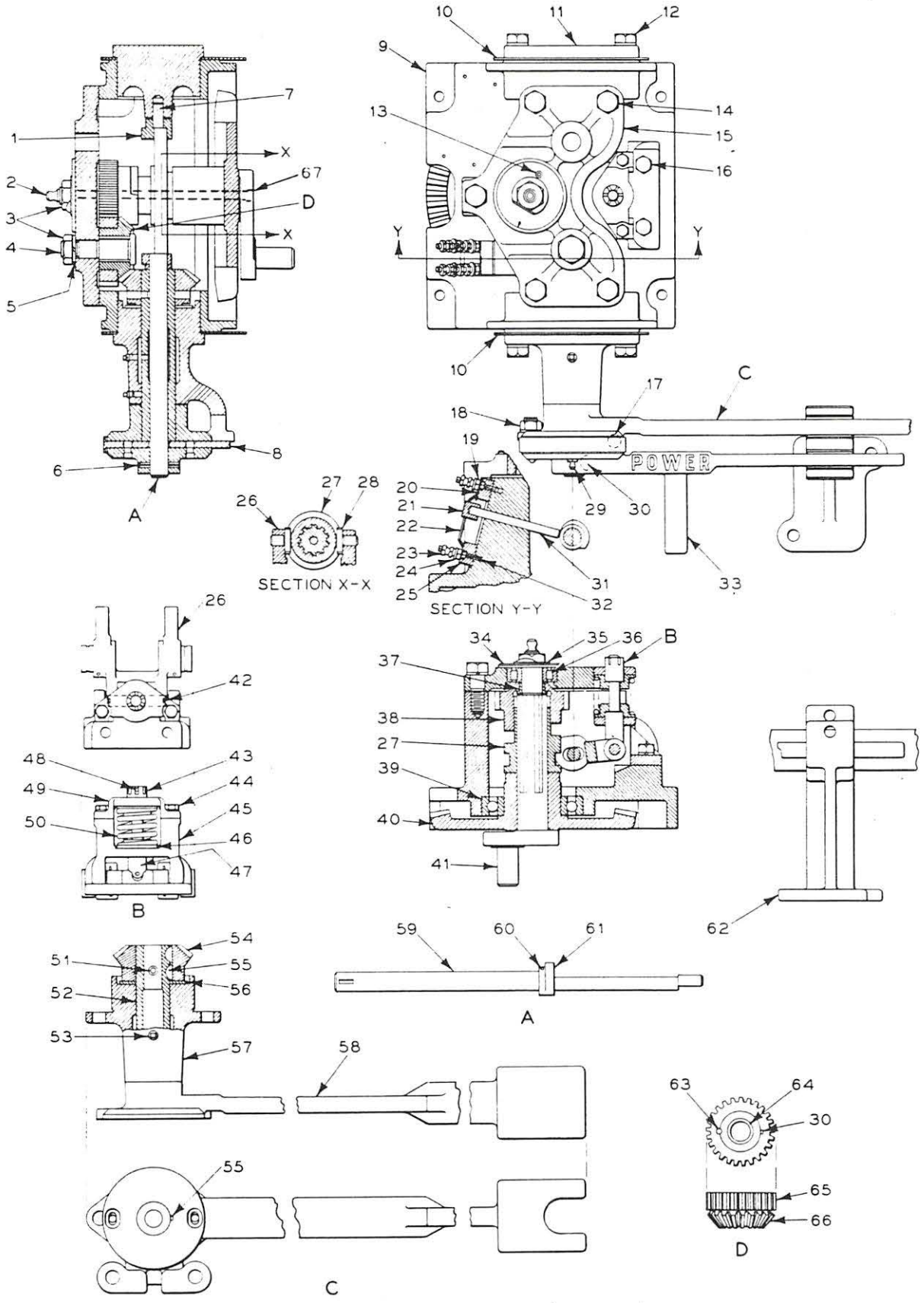
Memoranda

February 1972



Lock rods, detector rods, lugs and couplings.

Memoranda



Selector-lever and hand-throw parts.

Selector-Lever and Hand-Throw Parts

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	SHAFT COMPLETE, selector lever and cam shaft	P85-1141
B	SHIFTER COMPLETE, clutch	P85-1192
C	LEVER COMPLETE, hand throw	P85-1191
D	GEAR COMPLETE, for hand throw	P85-839
1	CAM, eccentric	P85-1160
2	FITTING, lubrication, for main gear crank	P85-1078
3	NUT, for crank and stud	P85-250
4	STUD COMPLETE	P85-799
5	WASHER, lock, for nut Ref. 3	P91-223
6	PIN, roll, for shaft	P85-316
7	FITTING, lubrication, for shaft	P81-140
8	PLATE COMPLETE, inner-lock	P85-846
9	BRACKET, only	P85-1176
10	PLATE, cover guide	P85-1043
11	BEARING, for shaft	P85-845
12	SCREW, for bearing	P87-108
12A	WASHER, lock, for above	P85-109
13	FITTING, lubrication, for crank	P85-380
14	SCREW, for plate Ref. 15	P85-255
14A	WASHER, lock, for above	P85-108
15	PLATE, only	P85-823
16	SCREW, for clutch shifter	P50-129
16A	WASHER, lock, for above	P50-101
17	BALL, for levers	P85-403
18	BOLT, for hand-throw lever	P50-730
18A	NUT, for above	P30-133
18B	WASHER, lock, for above	P85-109
19	NUT, for terminal posts	P62-333
20	FINGER, only	P85-1149
21	PUSHER, for plunger	P85-1195
22	SPRING, only	P85-1135
23	NUT, for terminal posts	P76-131
24	WASHER, for terminal posts	P76-108
25	BLOCK COMPLETE	P85-1156
26	YOKE, for clutch shifter	P85-849
27	SLEEVE, clutch	P85-175

Selector-Lever and Hand-Throw Parts

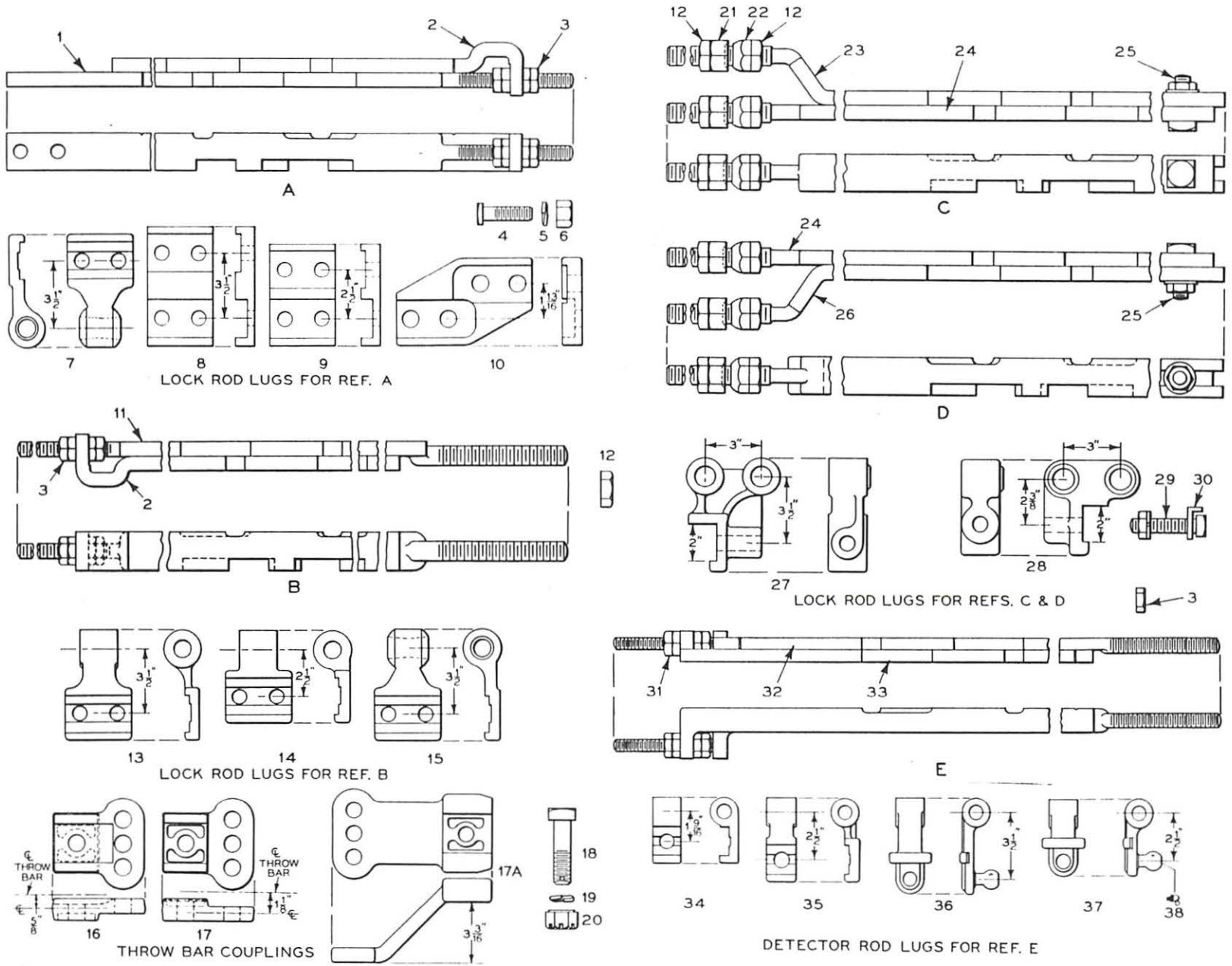
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
28	TRUNNION, for shifter	P85-351
29	FITTING, lubrication, for shaft	P85-378
30	KEY, for selector lever and gear Ref. D	P85-1011
31	ROD, plunger	P85-1070
32	SCREW, for mounting terminal blocks	P62-216
32A	WASHER, lock for above	P62-401
33	LEVER, selector	P85-1167
34	WASHER, for bearing	P85-180
35	WASHER, for nut Ref. 3	P85-181
36	BEARING, roller	P85-570
37	BUSHING, for gear Ref. 38	P85-1031
38	GEAR COMPLETE, with bushing	P85-840
39	BEARING, ball	P85-571
40	GEAR, main	P85-1113
41	CRANK, main gear	P85-1190
42	PIN, for clutch shifter	P85-1013
43	NUT, for eyebolt	P85-431
44	SCREW, for fastening cap to bracket	P85-227
44A	WASHER, lock, for above	P81-122
45	BRACKET, only	P85-1177
46	COLLAR, for spring	P85-412
47	EYEBOLT, for clutch shifter	P85-436
48	PIN, roll, for nut	P62-238
49	CAP, only	P85-824
50	SPRING, for clutch shifter	P85-196
51	PIN, for gear	P85-165
52	SHAFT, only	P85-1173
53	PLUG, pipe	P85-131
54	GEAR, only	P85-1060
55	KEY, for gear	P85-104
56	BEARING, thrust washer	P85-1132
57	BRACKET, bearing	P85-1188
58	LEVER, only	P85-1168
59	SHAFT, only	P85-1172
60	PIN, roll, for cam	P76-116
61	CAM, only	P85-1161

Selector-Lever and Hand-Throw Parts

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
62	STAND, for levers	P85-1189
63	PIN, for gear	P85-164
64	BUSHING, for gear	P85-267
65	GEAR, spur, 27 teeth	P85-1187
66	GEAR, bevel, 24 teeth	P85-1059
67	PIN, for plugging oil hole	P85-166



Lock rods, detector rods, lugs and couplings.

Lock Rods, Detector Rods, Lugs and Couplings

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	LOCK ROD COMPLETE, right or left-hand	P85-1101
B	LOCK ROD COMPLETE, right or left-hand, double adjustable	P85-1116
C	LOCK ROD COMPLETE, right-hand	P85-1186
D	LOCK ROD COMPLETE, left-hand	P85-1194
E	DETECTOR ROD COMPLETE, right- or left-hand	P85-1153
1	ROD, only	P85-1102
2	PLATE, adjusting	P85-1105
3	NUT, for lock rods Refs. A and B also for track end of detector rod Ref. E	P85-250
4	BOLT, for fastening lugs Refs. 7 thru 10 to lock rod	P85-1034
5	WASHER, lock, for above	P85-105
6	NUT, hex, for bolt Ref. 4	P91-220
7	LUG, 3-1/2" spacing, for 1-1/4" dia. lock connecting rod	P85-1004
8	LUG, 3-1/2" spacing, for 2" wide flat end lock connecting rod	P85-1006
9	LUG, 2-1/2" spacing, for 2" wide flat end lock connecting rod	P85-1005
10	LUG, 1-13/16" spacing for 2" wide flat end lock connecting rod	P85-1007
11	ROD, only	P85-1125
12	NUT, hex, for lock rods	P91-144
13	LUG, 3-1/2" spacing, for 1" dia. lock rod	A85-560
14	LUG, 2-1/2" spacing, for 1" dia. lock rod	A85-561
15	LUG, 3-1/2" spacing, swivel type, for 1" dia. lock rod, includes cup nuts	A85-562
16	COUPLING, for throw bar, for dapped ties	P85-1010
17	COUPLING, for throw bar, for dapped ties	P85-1009
17A	COUPLING, for throw bar, for use with non-dapped ties	P85-1214
18	BOLT, for fastening coupling to throw bar	P85-424
19	WASHER, lock, for above	P85-117
20	NUT, hex, for bolt Ref. 18	P85-552
21	NUT, hex, cupped, for lock rod	P85-1020
22	NUT, hex, for lock rod	P3-105
23	ROD, only, right-hand	P85-1154
24	ROD, only, right- or left-hand	P85-1140
25	BOLT, with hex nut, for lock rods	P30-106
25A	WASHER, lock, for above	P50-100
26	ROD, only, left-hand	P85-1179
27	LUG, 3-1/2" spacing, for 2" wide flat end lock connecting rod	P85-1068

Lock Rods, Detector Rods, Lugs and Couplings

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
28	LUG, 2-3/8" spacing, for 2" wide flat end lock connecting rod	P85-1067
29	BOLT, with hex nut, for fastening lugs Refs. 27 and 28 to connecting rods	P85-1065
29A	WASHER, lock, for above	P91-223
30	WASHER, bent-up lock	P85-1035
31	NUT, for detector rod	P85-208
32	ROD, only, for detector rod	P85-1197
33	ROD, only, for detector rod	P85-1144
34	LUG, 1-9/16" spacing, for 3/4" dia. detector rod	P85-1008
35	LUG, 2-1/2" spacing, for 3/4" dia. detector rod	A85-563
36	LUG, 3-1/2" spacing, for 3/4" dia. detector rod	A85-564
37	LUG, 2-1/2" spacing, for 3/4" dia. detector rod	A85-565
38	FITTING, lubrication, for detector rod lug	P87-101

CATALOG SECTION P85
PARTS LIST
Electric Switch Machines
SPEED-FRATER®

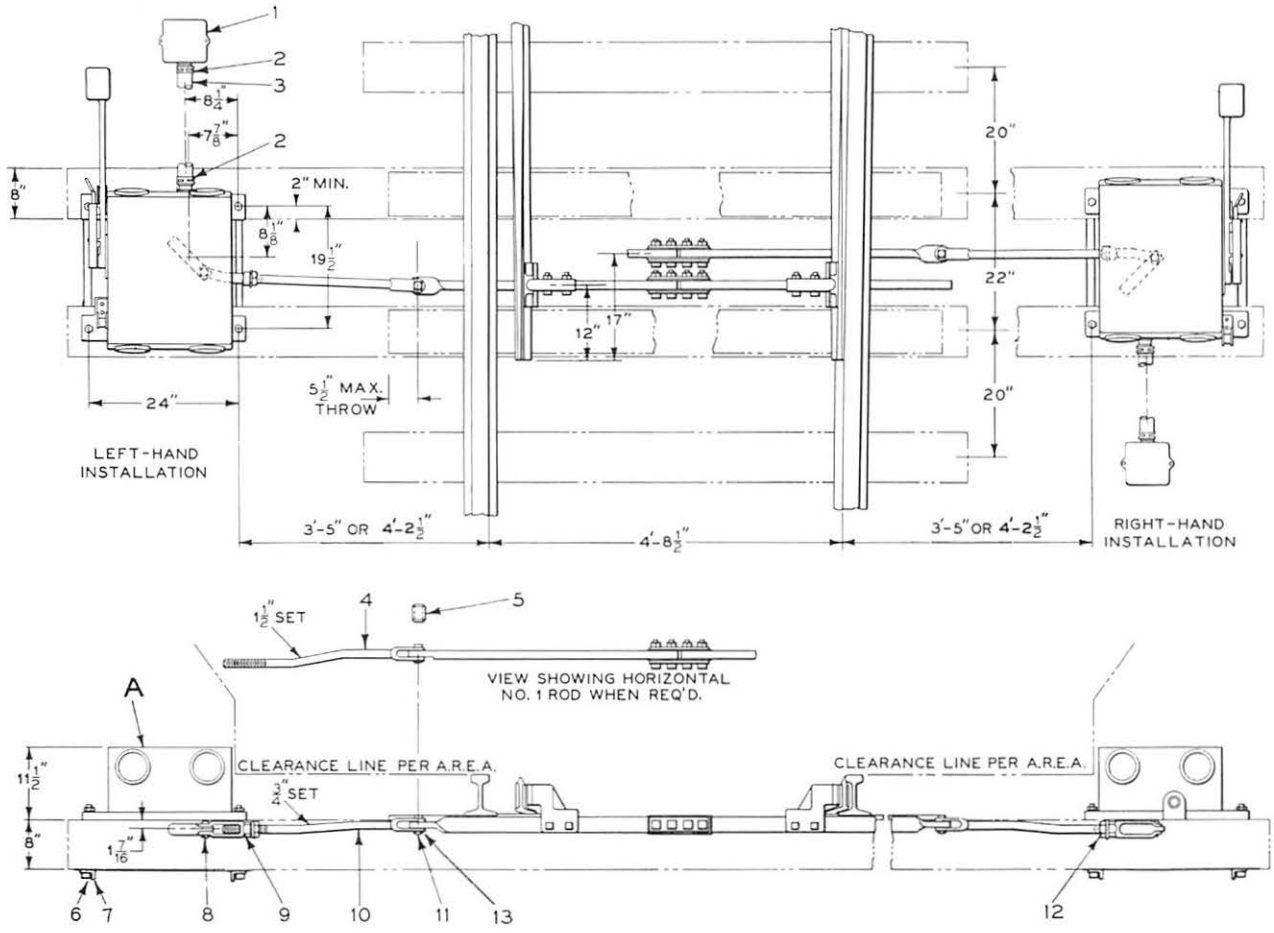
FOR ASSEMBLIES, SEE CATALOG SEC. 85-4

GENERAL RAILWAY SIGNAL
A UNIT OF GENERAL SIGNAL
ROCHESTER NEW YORK 14692

PRINTED IN U.S.A.

A2585

June 1984

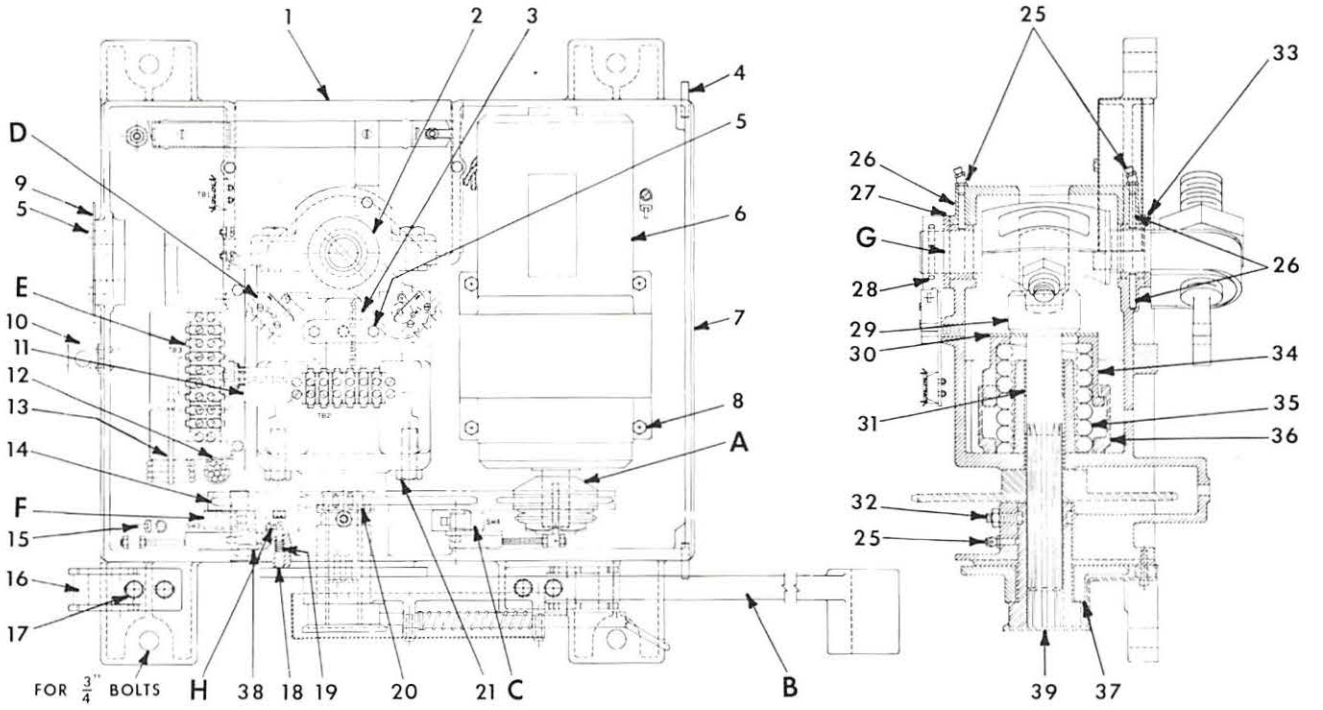


TYPICAL SPEED-FRATER LAYOUT

SPEED-FRATER LAYOUT

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	SPEED-FRATER COMPLETE, to order a complete Speed-Frater switch machine see GRS Catalog 85-4, for parts references see page 155	
1	TERMINAL BOX COMPLETE, 10 way	P85-1313
1A	Same as above, except 18 way	P85-1360
1B	NUT, for use on Ref. 1A	P85-1361
1C	BUSHING, for use on Ref. 1A	P85-1362
1D	ADAPTER, for use on Ref. 1A	P85-1363
1E	PEDESTAL, for terminal box	A91-233
2	NIPPLE, for rubber conduit	P85-1003
2A	CLAMP, hose	P85-1298
3	CONDUIT, rubber, 3'-0" long	P85-1322
4	ROD, throw, with 1½" set, for horizontal No. 1 rod	P85-1228
5	BUSHING, for No. 1 rod with 1" dia. hole	P85-1251
5A	As above, except for No. 1 rod with 1 1/8" dia. hole	P85-1252
5B	As above, except for No. 1 rod with 1 1/4" dia. hole	P85-1364
6	ROD, 13" long, for 8" or 9" ties	P85-1294
6A	NUT, square, for above	P85-112
6B	NUT, hex, for above	P76-105
6C	WASHER, angle	P85-105
7	WASHER, angle	P85-1246
8	PIN, 7/8" dia. for fastening jaw to speed-frater	P91-101
8A	FITTING, lubrication, for above	P81-140
9	JAW, adjustable offset	P85-1240
10	ROD, throw, with 3/4" set, for horizontal No. 1	P85-1227
10A	Same as above, except 41½" long	P85-1365
11	PIN, 7/8" dia, for fastening throw rod to No. 1 rod	P85-1237
11A	FITTING, lubrication, for above	P81-140
12	NUT, for locking jaw	P85-1348
12A	WASHER, lock, for above	P91-230
13	COTTER PIN	P85-971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FOR 3/4" BOLTS
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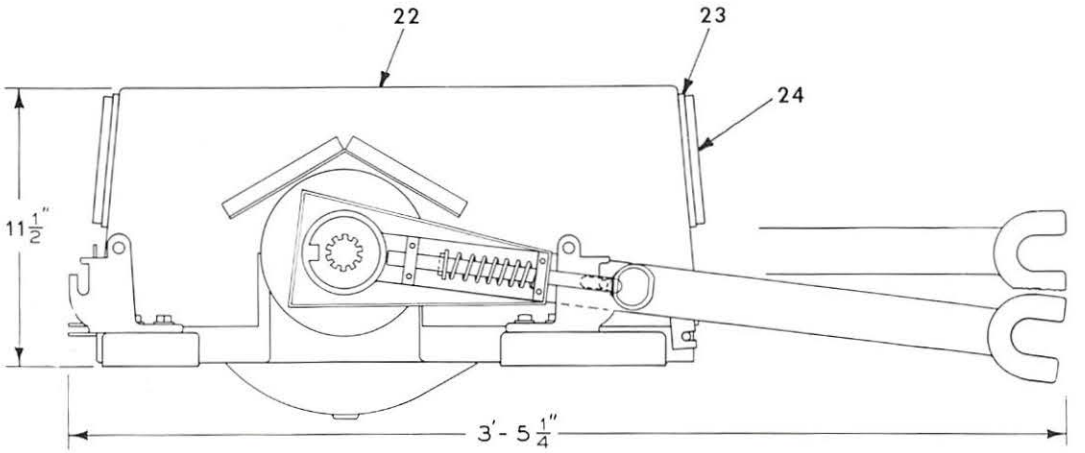
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23
24
11 1/2"
3'- 5 1/4"

SPEED-FRATER

Order by catalog number and name shown in bold type

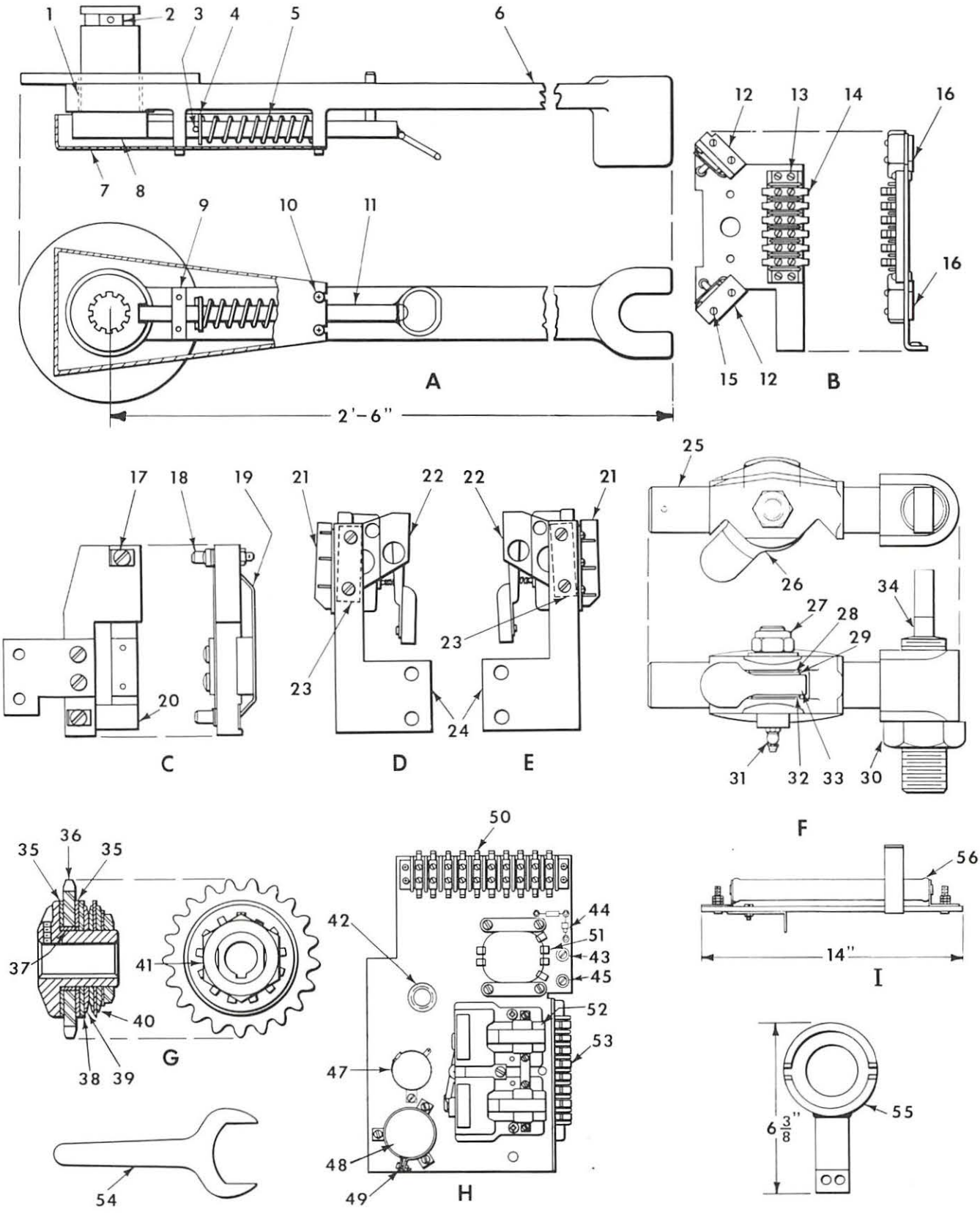
REF.	NAME	CATALOG NUMBER
A	CLUTCH, with sprocket, for parts references see page 159	P85-1320
B	LEVER COMP., hand throw, for parts references see page 159	P85-1319
C	SWITCH COMPLETE, for parts references see page 159	P85-1266
D	SWITCH COMPLETE, for parts references see page 159	P85-1265
E	PLATE COMPLETE, for references see page 159	
F	SWITCH COMPLETE, for parts references see page 159	P85-1267
G	SHAFT COMPLETE, for parts references see page 159	P85-1264
H	BRACKET COMP., cut-out switch, for parts references see page 159	P85-1349
1	PLATE, cover	P85-1248
2	CAM, only	P85-1310
3	NAME PLATE	P85-1230
4	PIN, hinge, for cover	P50-734
5	SCREW, for mounting various components	P65-267
6	MOTOR, only	P85–1312
	SEAL, oil, input shaft	P85-1272
	SLEEVE, oil seal, input shaft	P85-1273
	GASKET, bearing housing, motor end	P85-1274
	BEARING, input pinion shaft, motor end	P85-1275
	SHAFT, with gear, input pinion	P85-1276
	GEAR, first stage	P85-1277
	BEARING, input pinion shaft, opp. motor end	P85-1278
	BEARING, output shaft, opp. ext. end	P85-1279
	GASKET, bearing housing, opp. motor end	P85-1280
	SEAL, oil, output shaft	P85-1281
	SLEEVE, oil seal, output shaft	P85-1282
	BEARING, inter, shaft, output end	P85-1283
	DRIVER, pinion, second stage	P85-1284
	GEAR, driven, second stage	P85-1285
	BEARING, inter, shaft, opp. output end	P85-1286
7	FRAME COMPLETE	P85-1327
8	SCREW, for mounting motor	P85-1220
8A	WASHER, lock for above	P76-106
9	PLATE, for wire inlet	P85-1247
10	ANGLE, for cover	P85-1330
10A	RIVET, for above	P85-1219
11	PLATE, caution	P85-1231

SPEED-FRATER

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
12	TIE, cable	P85-1222
13	TIE, cable	P85-1223
14	SPROCKET COMPLETE, 54 teeth	P85-1271
15	TIE, cable	P85-1069
15A	SCREW, for above	P50-253
16	STAND, hand-throw levers stop	P85-1317
17	SCREW, for mounting stand	P50-136
17A	WASHER, for above	P85-221
18	PIN, shouldered plunger	P85-1242
19	SPRING, for pin Ref. 18	P85-198
20	CHAIN, 68 links	P85-1325
21	SCREW	P50-730
22	COVER COMPLETE, for use with lamp units	P85-1299
22A	As above, except for use without lamp units	P85-1300
23	LAMP UNIT	P85-1258
23A	LAMP BULB, for above, 13.5 volts, 17 watts	A46-108
24	LENS, green	P85-1314
24A	As above, except yellow	P85-1315
25	FITTING, lubrication	P85-385
26	PIN, roll	P85-315
27	BUSHING	P85-1254
28	PIN, roll	P85-1255
29	CRANK, main	P85-1318
30	BEARING, thrust	P85-1306
31	BUSHING, split	P85-1249
32	SCREW, slotted	P85-1245
32A	NUT, for above	P50-717
33	BUSHING, split	P85-1253
34	SEAT, spring	P85-1323
35	SPRING, main	P85-1239
36	BRACKET, for spring	P85-1316
37	WASHER, shim	P85-1235
38	SLEEVE, for wires to cut-out switch	P62-298

Memoranda



Detail parts for SPEED-FRATER

Detail parts for SPEED-FRATER

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	LEVER COMPLETE, handthrow	P85-1319
B	SWITCH COMPLETE, point detector switch	P85-1265
C	BRACKET COMPLETE, cut-out switch	P85-1349
D	SWITCH COMPLETE, motor limit switch, left hand	P85-1266
E	SWITCH COMPLETE, motor limit switch, right hand	P85-1267
F	SHAFT COMPLETE	P85-1264
G	CLUTCH COMPLETE	P85-1320
H	PLATE COMPLETE, for machine having automatic restoration and indicator lights	P85-1259
H1	As above, except with relay, capacitor and transformer, for basic machine only	P85-1260
H2	Same as Ref. H except without transformer, for machine with automatic restoration only	P85-1261
H3	Same as Ref. H, except without relay and capacitor, for machine with unit indicator lights only	P85-1262
H4	Same as Ref. H3, except for machine without indication lights	P85-1366
I	HEATER COMPLETE	P85-1367
1	BUSHING, for bearing	P85-1250
2	SHOE, for bearing	P85-1368
3	ROLL PIN, for spring	P76-116
4	WASHER, for spring	P85-1244
5	SPRING, compression	P85-1238
6	LEVER, only	P85-1311
7	COVER, only	P85-1302
8	BEARING, for lever	P85-1301
9	CAP, for plunger 1/2" wide	P85-1243
9A	Same as above, except 1" wide	P85-1369
10	SCREW, for caps	P85-1224
11	PLUNGER COMPLETE, for lever	P85-1229
12	SWITCH, micro	P85-1290
13	SCREW, for mounting terminal strip	P65-208
14	TERMINAL STRIP, 6 way	P85-1268
15	SCREW, for mounting switches	P85-1226
16	NUT, strap, for screws	P85-1305
17	SCREW, for contact springs	P62-178
17A	NUT, for above	P76-129
17B	WASHER, lock, for above	P62-401
18	TERMINAL, FASTON	P85-1040
19	SPRING, contact	P85-1351
20	FINGER, contact	P85-1352

Detail parts for SPEED-FRATER

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
21	SWITCH	P85-1291
22	ACTUATOR COMPLETE	P85-1331
23	NUT, strap, for screws	P85-1370
24	PLATE, for switches	P85-1371
25	SHAFT	P85-1308
26	ARM	P85-1309
27	BOLT, for bearing	P85-1293
27A	NUT, for above	P85-1233
28	WASHER, for bearing	P85-1234
29	WASHER, shim	P85-1372
30	NUT, for eyebolt	P85-1297
31	OILER, for bearing	P85-385
32	WASHER, shim	P85-1373
33	BEARING, thrust	P85-1307
34	EYEBOLT, for shaft	P85-1304
35	DISC, friction	P85-1303
36	SPROCKET, 21 teeth	P85-1324
37	BUSHING, for sprocket	P85-1295
38	PRESSURE PLATE	P85-1374
39	WASHER, disc spring	P85-1375
40	SPACER, spring guide	P85-1376
41	WASHER, tab	P85-1377
42	GROMMET	P85-1321
43	RESISTOR (1K 12W)	P85-1256
44	RESISTOR (300 ohms 2W)	P85-1328
45	RESISTOR (600 ohms 12W)	P85-1257
46	DIODE (600V-1A)	P85-1329
47	RELAY COMPLETE, Magnacraft	P85-1359
47A	RELAY COMPLETE, JT	A69-150
47B	CLIP, for securing Type J relay	P85-1350
48	CAPACITOR	P85-1326
49	CLAMP, for above	P85-1236
50	TERMINAL STRIP, 10 way	P85-1270
51	TRANSFORMER	P85-1289
52	CONTACTOR	P85-1263
53	TERMINAL STRIP, 8 way	P85-1269
54	WRENCH, for adjusting clutch	P85-974
55	BRACKET, to prevent premature pin pulling	P85-1378
56	RESISTOR, for heater	P85-1379

CATALOG SECTION P85

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P85-013	425-16		KEY	91
P85-014	441-7		STUD	87
P85-015	441-86		STUD	95
P85-016	441-90		STUD	87
P85-017	504-259		PIN	98
P85-018	586-25		SPRING	103
P85-019	17188-42		PIN	98, 135
P85-020	786-45		SPRING	97
P85-021	786-102		SPRING	95
P85-022	786-235		SPRING	92
P85-023	786-361		SPRING	95
P85-024	0399-1		SCREW	95
P85-025	0424		BOLT & NUT	87
P85-027	0511		BOLT	97
P85-028	0516-1		SCREW	101
P85-031	0706		BOLT	87
P85-032	2193		PIN	111
P85-035	03610-148		SCREW	111
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P85-037	2856		PIN	95
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P85-040	44987		SCREW	83
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P85-042	6226-25GR9		JCT BOX	111
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P85-045	6714-157		BUSHING	98
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P85-127	0678-2		PLUG	55
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P85-153	441-266		STUD	16
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P85-160	493-26		WASHER	34
P85-161	493-119		WASHER	56, 59, 107
P85-162	500-10		PIN	16
P85-164	504-109		PIN	22, 141
P85-165	504-121		PIN	22, 140
P85-166	504-122		PIN	22, 141
P85-167	504-202		PIN	21
P85-168	504-208		PIN	21
P85-169	504-247		PIN	21
P85-170	504-393		PIN	65
P85-171	545-12		NUT	16, 92
P85-175	585-13		SLEEVE	
P85-176	586-51		SPRING	52, 128, 132
P85-177	586-195		SPRING	51
P85-178	590-17		WASHER	33, 38, 98, 101, 103, 118
P85-179	590-36		WASHER	48
P85-180	590-40		WASHER	21, 140
P85-181	590-41		WASHER	21, 140
P85-182	590-101		WASHER	56, 59, 107
P85-183	626-89		WASHER	48
P85-184	626-127		WASHER	34
P85-185	626-201		SHIM	52, 127, 131
P85-187	730-62		PIN	39
P85-188	730-121		PIN	39
P85-189	734-1		LINK	29
P85-190	734-3		LINK	45
P85-191	734-4		LINK	45
P85-192	786-5		SPRING	16, 91
P85-193	786-7		SPRING	17, 87, 98
P85-194	786-8		SPRING	34
P85-195	786-108		SPRING	48
P85-196	786-139		SPRING	21, 140
P85-197	786-144		SPRING	52, 128, 132
P85-198	786-293		SPRING	52, 127, 131, 156
P85-200	786-353		SPRING	39, 124

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ELECTRIC SWITCH MACHINES - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P85-201	01250-7		WASHER	52, 128, 132
P85-202	980-32		STUD	17
P85-204	1048-5		NUT	26, 84
P85-205	1155-11		NUT	48, 56
P85-207	1225-151		WASHER	52
P85-208	1318		NUT	43, 144
P85-209	1333-4		WASHER	63
P85-210	1396-34		SPRING	65
P85-211	1439-23		REDUCER	65
P85-212	1544-10		BLOCK	59, 107
P85-213	1547		ARM	57, 60, 108
P85-214	1563		PIN	57, 60, 108
P85-215	1581		SPRING	57, 60, 108
P85-216	1581-13		SPRING	48
P85-217	1601-80		WASHER	39, 123
P85-218	1601-82		WASHER	34
P85-219	1601-88		WASHER	17
P85-221	01250-16		WASHER	56, 117, 156
P85-222	2137-4		YOKE	59, 107
P85-223	2349-5GR1		HOLDER	22, 55
P85-224	2349-6GR1		HOLDER	59, 107
P85-225	626-215		WASHER	
P85-227	2472-35		SCREW	21, 140
P85-228	2472-1		SCREW	34
P85-229	2472-45		SCREW	59, 107, 117
P85-231	2472-53		SCREW	55
P85-232	2539-47		INSULATION	56, 59, 107
P85-233	03608-10		SCREW	39
P85-236	03610-132		SCREW	38
P85-238	03610-108		SCREW	38
P85-239	3053-1		WASHER	16, 92
P85-241	3343-31		SCREW	26, 83
P85-242	3440-67		SCREW	5, 9, 84
P85-244	3440-20		SCREW	128, 132
P85-245	3440-22		SCREW	47, 128, 132
P85-246	3440-66		SCREW	47
P85-247	3955-3		SCREW	17
P85-248	3955-14		SCREW	11, 13, 17, 33, 38, 101, 103, 118
P85-249	4196-3		ROD	17, 88
P85-250	4364		NUT	21, 43, 139, 143
P85-251	4811-1		SCREW	26
P85-252	4811-2		SCREW	26
P85-253	4811-3		SCREW	26
P85-254	4811-4		SCREW	26, 29
P85-255	4811-52		SCREW	31, 139
P85-256	4906-53		CONNECTOR	56
P85-257	4906-54		CONNECTOR	57
P85-260	5713-53		RING	
P85-262	6358-1		NUT	33
P85-263	6385-2		CONE	55
P85-267	6714-336		BUSHING	22, 141
P85-268	6714-271		BUSHING	25
P85-276	01272-5		NUT	
P85-277	7275-1		ROLLER	34
P85-278	7628-3		NUT	17
P85-279	8942-52		BUSHING	31
P85-280	9032-1GR3		MAGNET	56
P85-281	9037-1GR3		MAGNET	56
P85-282	9039 GR1		SHIELD	56
P85-284	9665-2		STUD	39, 124
P85-285	10118-6		NUT	
P85-286	11072-2		GIB	26
P85-287	12249		NIPPLE	26
P85-290	12485-9		INSULATION	56, 60, 108

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ELECTRIC SWITCH MACHINES - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P85-291	12485-10		INSULATION	56, 60, 108
P85-293	03410-132		SCREW	51, 127
P85-295	13006-62		SCREW	51
P85-296	13014-140		GASKET	56
P85-297	13014-269		GASKET	5
P85-298	13014-281		GASKET	65
P85-300	13026-34		CONTACT	18
P85-301	13783		PIN	34
P85-302	14937-1GR1		TUBE	25, 87
P85-303	15287-13		SCREW	59, 107
P85-304	15350-1		PIN	39
P85-305	15350-2		PIN	39
P85-306	15350-27		PIN	16
P85-307	15541-23		WASHER	56, 59, 107
P85-308	15753-6		SCREW	53, 128, 132
P85-309	075-3		RIVET	29
P85-310	16110-9		HASP	55
P85-311	16829-1		SCREW	34
P85-313	17188-3		PIN	55
P85-314	17188-14		PIN	55
P85-315	17188-22		PIN	156
P85-316	17188-33		PIN	22, 55, 139
P85-317	17188-34		PIN	22
P85-318	17188-36		PIN	56, 59, 107, 124
P85-319	17188-38		PIN	56
P85-320	17188-40		PIN	59, 107
P85-321	17199 GR3		CASE	47
P85-322	17378-26		STRIP	38
P85-323	17538-1		STUD	47
P85-324	17538-2		STUD	47
P85-325	17546		WASHER	52
P85-327	17188-58		PIN	39
P85-328	18293-2GR1		CONTACT	51
P85-329	18322-1		RIVET	29
P85-330	363-5		SCREW	55
P85-332	20090-1		PIN	16, 92
P85-333	20131-15		PLUG	48
P85-334	20263-1		GEAR	22
P85-336	21517-1		PIN	16, 92
P85-337	21521-4		SCREW	
P85-338	21588-3GR1		POLE PIECE	56, 59, 107
P85-339	21623-6GR1		COIL	34
P85-341	22539-2		WASHER	52, 128, 132
P85-342	22949		PIN	29, 131
P85-344			BEARING	25
	01054		BEARING	
	0441-5	2	BOLT	
	1601-162	2	WASHER	
P85-347	27029		BALL	35
P85-349	27119		SCREW	45
P85-350	29151-17		SCREW	52, 127, 131
P85-351	29545-15		TRUNNION	21, 140
P85-352	29614-3		STUD	34
P85-354	29960-1		PLUNGER	17, 87, 98
P85-355	29967-1		ADJUSTER	39, 123
P85-359	30049-20		SCREW	15, 91
P85-360	54106-111		PLATE	65
P85-361	30804-4		STRAP	29
P85-362	30804-18		STRAP	55
P85-363	30875		SPRING	35
P85-365	31066-121GR1		COIL	52, 132
P85-366	31066-121GR2		COIL	52, 132
P85-367	31066-122GR1		COIL	53, 132
P85-368	31066-122GR2		COIL	53, 132
P85-369	31066-126GR3		COIL	53
P85-370	31760-90		PLATE	23
P85-371	31760-91		PLATE	23
P85-372	31942-87		ROLLER	34
P85-373	32168-8		BRACKET	17
P85-374	33594-2		HOLDER	57, 60, 108

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ELECTRIC SWITCH MACHINES - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P85-375	33595-2		HOLDER	57, 60, 108
P85-376	33890-6		CONTACT	33, 98
P85-377	34232-20		FITTING	25, 87
P85-378	34232-17		FITTING	22, 31, 140
P85-379	34232-18		FITTING	31, 87
P85-380	34232-21		FITTING	16, 21, 26, 91, 139
P85-381	34232-27		FITTING	34, 39
P85-382	34232-64GR2		FITTING	21
P85-383	34232-67GR1		FITTING	21
P85-384	34232-70		FITTING	31, 87
P85-385	34232-43		FITTING	26, 150, 160
P85-386	34254		WASHER	34
P85-387	01250-18		WASHER	34
P85-388	34425-68		FINGER	18
P85-389	34425-69		FINGER	18
P85-390	01273-4		WASHER	33, 38, 98, 101, 103, 104, 108
P85-391	35470-4		STOP	38
P85-392	35470-65		STOP	38
P85-394	35521-1		LINK	60, 108
P85-395	35780-2		BRUSH	57
P85-396	35780-9		BRUSH	57, 59, 107
P85-397	35788-1		SCREW	39
P85-399	35845-607		PLATE	52
P85-402	36024-10		LINK	16
P85-403	36126-7		BALL	22, 139
P85-405	36593-5		WRENCH	67
P85-406	36593-6		WRENCH	67
P85-407	36593-7		WRENCH	67
P85-408	36593-8		WRENCH	67
P85-410	36593-22		WRENCH	67
P85-412	37522-3		COLLAR	21, 140
P85-413	37539-1		NUT	26, 111
P85-414	37695-45		EYELET	51
P85-416	38043-8		CLIP	27
P85-417	38043-9		CLIP	26
P85-418	38043-46		CLIP	31
P85-419	38104 GR2		PLATE	51
P85-420	38146-3GR1		CONTACTOR	51
P85-421	38146-3GR2		CONTACTOR	51
P85-422	38165-83		SPACER	55
P85-423	38165-72		SPACER	55
P85-424	38186-4		BOLT	29, 143
P85-425	38214 GR4		RELAY	51
P85-426	38214 GR3		RELAY	51
P85-427	38239		NUT	34, 98
P85-428	38439 GR1		ARM	51, 128, 132
P85-429	38471-3		BUSHING	60, 108
P85-430	38489 GR2		BRACKET	51
P85-431	38931-4		NUT	21, 140
P85-432	39043-25GR1		ARMATURE	51, 127
P85-433	39043-38GR1		ARMATURE	51, 127, 131
P85-434	39319-1		BOLT	26, 111
P85-435	39319-2		BOLT	26
P85-436	39319-15		BOLT	21, 140
P85-437	39533-28		BUSHING	39
P85-438	40568-3		NIPPLE	65
P85-439	40760		SCREW	34
P85-440	42179-1		SCREW	56
P85-442	42333-60		NUT	
P85-443	42333-58		NUT	51
P85-444	42737-1		PIN	29
P85-445	42760-163GR1		CONNECTOR	51, 128, 132
P85-446	42760-167GR1		CONNECTOR	52, 127, 131
P85-447	42760-174GR4		CONNECTOR	53
P85-448	42760-191GR1		CONNECTOR	53
P85-449	42760-199GR1		CONNECTOR	53
P85-450	42799-22GR1		CONTACT	15

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CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P85-451	42799-32GR3		CONTACT	52, 127,131
P85-452	42799-32GR2		CONTACT	52, 127,131
P85-453	42836-35		YOKE	53
P85-454	43119-5GR1		BLOCK	59, 107
P85-457	43460-12		GASKET	5, 9,11,13
P85-460	43460-22		GASKET	56
P85-461	43576-5		WRENCH	67
P85-462	45048-21		SCREW	18
P85-463	45337		KEY	34
P85-465	45510-2GR2		CAM BAR	29
P85-467	45510-7GR1		CAM BAR	29
P85-468	45512-5GR7		LOCK ROD	43
P85-469	45512-6GR6		LOCK ROD	43
P85-470	45519-5		ROD	43
P85-471	45519-6		ROD	43
P85-472	45520-1GR1		COVER	5
P85-473	45520-2GR1		COVER	5
P85-475	45520-9GR2		COVER	11, 13
P85-476	45520-11GR1		COVER	9
P85-478	45522-1GR3		CLUTCH	15, 91
P85-479	45522-1GR13		CLUTCH	15
P85-480	45522-1GR14		CLUTCH	15
P85-481	45522-1GR16		CLUTCH	15
P85-482	45525-4		PLATE	43
P85-483	45525-5		PLATE	43
P85-484	45526-3		BLOCK	39, 124
P85-495	45532-11		GEAR	16, 91
P85-496	45532-12		GEAR	16
P85-497	45532-15		GEAR	21
P85-498	45532-46		GEAR	16
P85-499	45532-47		GEAR	16
P85-500			GEAR	15
	45532-46		GEAR	
	45560-5		SHAFT	
	45533-14		PINION	
	500-10		PIN	
P85-501			GEAR	15
	45532-47		GEAR	
	45560-5		SHAFT	
	45533-14		PINION	
	500-10		PIN	
P85-506	45533-6		PINION	16, 91
P85-507	45533-12		PINION	56
P85-508	45533-14		PINION	16
P85-509	45533-19		PINION	56, 59,107
P85-510	45535-1		GEAR	15, 91
P85-511	45535-2		GEAR	15
P85-512	45536-8		BEARING	15, 91
P85-513	45538-8		THROW BAR	29
P85-514	45541-11		ROLLER	16, 22
P85-515	01273-9		WASHER	
P85-516	45556-2		CASE	16, 92
P85-517	45557-19		DISC	16, 92
P85-518	45557-26		DISC	16, 92
P85-519	45557-27		DISC	16, 92
P85-520	45557-28		DISC	16, 92
P85-521	45559-3		NUT	15, 91
P85-522	45560-3		SHAFT	16, 92
P85-523	45560-5		SHAFT	16
P85-525	45572-5		SCREW	26, 83,87
P85-527	03415-40		SCREW	47, 117
P85-528	45574-4		TUBE	34
P85-529	45589-11		BLOCK	33, 38,98,101,103
P85-530	45600-2		DOG	29
P85-531	45600-5		DOG	29
P85-532	45600-6		DOG	29
P85-533	45600-11		DOG	29

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CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P85-534	45609-33		SCREW	26, 87
P85-535	45630-13GR1		MOTOR	59, 107
P85-536	45630-19GR1		MOTOR	55
P85-537	45630-19GR2		MOTOR	55
P85-538	45631-9GR1		ARMATURE	55, 59
P85-539	45631-9GR2		ARMATURE	55
P85-540	45640-11		CASE	56, 59,107
P85-541	45640-27		CASE	55
P85-542	45640-24		CASE	56
P85-543	45642-9		BEARING	59, 107
P85-546	45688-98GR1		COUPLING	65
P85-547	45938-3		BOLT&NUT	22
P85-548	46048-9GR1		TERM BLOCK	7
P85-549	46048-73GR1		TERM BLOCK	15
P85-550	46548-1		NUT	17
P85-551	46553-1		BUTTON	17
P85-552	47191-9		NUT	29, 109,143
P85-553	47358-14		BRACKET	51, 128,132
P85-554	47358-16		BRACKET	51, 128,132
P85-555	47475-6		BOARD	63
P85-556	47508-224		BLOCK	53
P85-557	47508-158		BLOCK	52
P85-558	42333-1		NUT	
P85-559	48016-1		WASHER	33, 101,103
P85-560	48509-1		STUD	45
P85-561	48569		NUT	18, 88,97
P85-562	48795-1		COUPLING	5, 9,84
P85-564	49034		NIPPLE	65
P85-566	49476-46		STUD	26, 84
P85-568	49536-24		BEARING	22
P85-569	49536-25		BEARING	22
P85-570	49536-27		BEARING	22, 140
P85-571	49536-28		BEARING	22, 140
P85-573	49536-91		BEARING	59, 107
P85-574	49588-2GR1		YOKE	34
P85-575	49589-1		SPRING	33, 104
P85-576	49589-3		SPRING	33, 103
P85-577	49589-48		SPRING	33, 104
P85-578	49589-56		SPRING	17
P85-579	49589-95		SPRING	17
P85-580	49589-96		SPRING	17
P85-581	49637-1		WASHER	52, 127,131
P85-582	49655-97		SPACER	57
P85-583	49655-205		SPACER	48
P85-587	50563-4		LEVER	45
P85-589	50572-1GR1		BASE	34
P85-593	51106-2GR1		ARM	33
P85-594	51106-4GR1		ARM	34
P85-595	51114-4		GUARD	5, 9
P85-596	51114-13		GUARD	9
P85-597	51131-2GR1		COVER	59, 107
P85-598	51140-1GR1		GEAR	15
P85-599	51140-6GR1		GEAR	15, 91
P85-600	51140-6GR2		GEAR	15
P85-601	51141 GR1		PLUNGER	34
P85-602	51141-1GR1		PLUNGER	33
P85-603	51142 GR1		PLATE	33
P85-604	51143 GR1		ARM	33
P85-605	51143 GR2		ARM	33
P85-606	51144 GR1		PINION	15, 91
P85-607	51144 GR2		PINION	15
P85-608	51144 GR3		PINION	15
P85-609	51144 GR4		PINION	15
P85-610	49588-11GR1		YOKE	97
P85-611	49588-11GR2		YOKE	97
P85-612	49588-21GR1		YOKE	97
P85-613	49588-21GR2		YOKE	97
P85-614	49589-5		SPRING	104
P85-615	49655-17		SPACER	95
P85-616	49655-224		SPACER	95

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CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P85-617	50086-3		BLOCK	104, 108
P85-618	51114-8		GUARD	83
P85-619	51140-6GR3		GEAR	91
P85-620	51140-8GR1		GEAR	91
P85-622	51150-1		BRACKET	83
P85-623	51168-2		PLATE	87
P85-624	51192-13GR1		CONTACT GR	103
P85-625	51193-19GR1		CONTACT	103
P85-626	51193-20GR1		CONTACT	103
P85-627	51194-9GR1		SPRING	103
P85-628	51195-13GR1		FINGER	97
P85-629	51198 GR2		POST	103
P85-630	51198-2GR3		POST	103
P85-631	51198-2GR4		POST	104
P85-632	51198-3GR6		POST	103
P85-633			GREASE FITTING FOR BRACKET	87
	51380-8		ELBOW	
	640-9		COUPLING	
	34232-18		OILER	
	47915-25		NIPPLE	
P85-634	52318-8GR1		COVER	111
P85-635	52502 GR4		SECTOR	95
P85-636	52502-1GR1		SECTOR	95
P85-637	52502-1GR3		SECTOR	95
P85-638	52504 GR1		BRACKET	83, 87
P85-639	52505 GR1		THROW BAR	83
P85-640	52506-3GR1		TRANSF GR	97
P85-641			CONT PLATE	97
	52507-2GR4		CONT PLATE	
	54025-2GR1		BLOCK	
P85-642	52522-1		CAM	95
P85-643	52522-2		CAM	95
P85-644	52523		SECTOR	95
P85-645	52523-1		SECTOR	95
P85-646	52525		BLOCK	95
P85-647	52527		PLATE	97
P85-648	52528		BEARING	87
P85-649	52529		PLATE	87
P85-651	52530-2		CAM	95
P85-652	52531-1		BEARING	95
P85-653	52532-1		ARM	95
P85-654	52532-2		ARM	95
P85-655	53347-3		PIN	92
P85-656	53742-3GR1		WRENCH	92
P85-657	54011-82GR1		BOARD	83
P85-658	54025 GR1		BLOCK	33, 97
P85-659	54025-2GR1		BLOCK	97
P85-661	54546-3GR1		GEAR	91
P85-662	54546-3GR2		GEAR COMP	91
P85-663	54569-1		SHAFT	91
P85-664	55470-12		SCREW	98
P85-665	55478-5GR1		BRACKET	103, 108
P85-666	55566-2		RESISTOR	111
P85-667	55945-9GR1		RESISTOR	98, 101
P85-668	56954 GR2		CRANK	83
P85-669	56963 GR1		FRAME	87
P85-670	56090-8GR2		HEATER	103, 107
P85-701			BRACKET	31,
	51145 GR1		BRACKET	87
	34232-18		FITTING	
	34232-70		FITTING	
P85-702	51145-1GR2		BRACKET	31
P85-703	51146 GR1		SHAFT	34
P85-704	51146-2GR3		SHAFT	
P85-705	51147 GR1		CRANK	17, 88
P85-706	51149-3GR2		YOKE	39
P85-707	51149-1GR7		YOKE	39
P85-708	51151		YOKE	39
P85-709	51153-1		COUPLING	29
P85-710	51154		BRACKET	29
P85-711	51155		HASP	29
P85-712	51156		YOKE	34
P85-713	51157		PLATE	39
P85-714	51158		BEARING	34
P85-715	51159		ARM	35
P85-716	51159-1		ARM	35
P85-717	56854-6GR1		ARM SW MACH COMP	33
P85-718	51164		BOLT	33
P85-719	51168-15		PLATE	31
P85-720	51168-33		PLATE	26
P85-721	51170-1		DOG	45
P85-722	51170-2		DOG	45
P85-723	51170-3		DOG	45

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ELECTRIC SWITCH MACHINES - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P85-724	51172		DISC	29
P85-725	51173-4		BLOCK	5, 26
P85-726	51174		ROLLER	39
P85-727	51175		PLATE	16, 22, 92
P85-728	51176		ROD	43
P85-729	51176-1		ROD	43
P85-730	51176-5		ROD	43
P85-731	51176-24		ROD	43
P85-733	51187		CLIP	45
P85-734	51187-1		CLIP	45
P85-735	51187-2		CLIP	45
P85-737	51190 GR1		GUARD	5, 9
P85-738	51190 GR2		GUARD	5, 9
P85-739	51192-2GR6		CONTACT GR	33
P85-740	51192-15GR1		CONTACT GR	38
P85-741	51192-16GR1		CONTACT GR	38
P85-743	51193-3GR2		CONTACT	33
P85-744	51193-5GR4		CONTACT	33, 103
P85-745	51193-9GR2		CONTACT	33
P85-746	51194-5GR1		SPRING	17
P85-747	51195-17GR1		FINGER	39
P85-748	51195-18GR1		FINGER	39
P85-752	51197-3		SPRING	38
P85-753	51198-3GR2		POST	33, 38, 98, 101, 103
P85-754	51198-5GR1		POST	39
P85-755	51199-5		FINGER	38, 123
P85-756	51320-58GR1		SUPPORT	53, 127, 131
P85-757	51320-59GR1		SUPPORT	53, 127, 131
P85-758	51323 GR1		HASP	29
P85-759	51324 GR1		BRACKET	29
P85-760	51326 GR2		MOVEMENT	33
P85-761	51326-3GR9		MOVEMENT	38
P85-762	51326-3GR10		MOVEMENT	38
P85-763	51327 GR7		DET ROD	43
P85-764	51327-1GR5		DET ROD	43
P85-765	51327-2GR7		DET ROD	43
P85-766	51327-11GR7		DET ROD	43
P85-767			LINK MOTION	45
	50563-4	2	LEVER	
	734-3		LINK	
	734-4		LINK	
	51170-2		DOG	
	51170-3		DOG	
	51187		CLIP	
	51187-1		CLIP	
	441-12	2	STUD	
	441-11	2	STUD	
	48509-1	2	STUD	
	27119	4	SCREW	
	043	2	COTTER	
	039	2	COTTER	
	037-2	2	COTTER	
	35788-3	2	SCREW	
P85-768			LINK MOTION	45
	50563-4	2	LEVER	
	734-3		LINK	
	734-4		LINK	
	51170		DOG	
	51170-1		DOG	
	51187		CLIP	
	51187-1		CLIP	
	441-12	2	STUD	
	441-11	2	STUD	
	48509-1	2	STUD	
	27119	4	SCREW	
	043	2	COTTER	
	039	2	COTTER	
	037-2	2	COTTER	
	35788-3	2	SCREW	
P85-769			LINK MOTION	45
	50563-6	2	LEVER	
	734-31		LINK	
	441-11	2	STUD	
	441-12	2	STUD	
	51187-1		CLIP	
	51187		CLIP	
	039	2	COTTER	
	043	2	COTTER	
	27119	4	SCREW	
P85-770	51332		FINGER	17, 88

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ELECTRIC SWITCH MACHINES - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P85-771	51333		STUD	17, 87
P85-772	51347-6GR3		OIL	67
P85-773	51347-18GR1		OIL	
P85-774	51352 GR2		BLOCK	15, 88
P85-775	51352-2GR1		BLOCK	15
P85-776	51353		CONTACT	18, 88
P85-777	51354		LEVER	17, 88
P85-778	51358		PIN	17, 88
P85-779	51359-3		BLOCK	16
P85-780	51359-4		BLOCK	16
P85-781	51359-7		BLOCK	17
P85-782	51359-8		BLOCK	17
P85-783	51359-10		BLOCK	57
P85-785	52256-8GR1		BLOCK	51, 131
P85-786	52256-14GR1		BLOCK	51
P85-788			COVER	5,
	52318-16GR1		COVER	9,
	504-397		PIN	83
P85-789	52318-19GR1		COVER	55
P85-790	52318-20GR2		COVER	47
P85-791	52318-46GR1		COVER	65
P85-792	52557-9		EXTENSION	23
P85-793	52557-11		LEVER	23
P85-794	52589-5GR2		LOCK STAND	31
P85-795	52681-5		SCREW	47
P85-796	52681-8		SCREW	118
P85-797	52681-10		SCREW	56
P85-799	52923-1GR1		STUD	22, 139
P85-800	53007-17		MAGNET	52
P85-801	53029-75		WASHER	47, 57
P85-802	53029-78		WASHER	31
P85-803	53029-72		WASHER	47
P85-805	53029-61		WASHER	59, 107
P85-807	53615 GR3		SWITCH	63
P85-810	53721-22		CLIP	26
P85-811	58605-37GR1		COVER	56
P85-812	53879-16		SHIM	52, 128,132
P85-815	53908-2		SHAFT	22
P85-817	53936-4		LEVER	17
P85-819	54027 GR1		BLOCK	33
P85-821	54227		BLOCK	39
P85-822	54247-1		NUT	48
P85-823	54314		PLATE	31, 139
P85-824	54318		CAP	21, 140
P85-826	54477-2GR1		CRANK	5, 9,83
P85-827			BIASED NEUTRAL CONTROLLER	47
	54532-12GR11		CONTROLLER	
	42839-5	20	NUT	
	1225-2	20	WASHER	
P85-828			BIASED NEUTRAL CONTROLLER	47
	54532-12GR12		CONTROLLER	
	42839-5	20	NUT	
	1225-2	20	WASHER	
P85-831			RELAY GROUP	47
	54534-7GR1		RELAY GR	
	42839-5	20	NUT	
	1225-2	20	WASHER	
P85-832			RELAY GROUP	47
	54534-7GR2		RELAY GR	
	42839-5	20	NUT	
	1225-2	20	WASHER	
P85-833			RELAY GROUP	47
	54534-7GR3		RELAY GR	
	42839-5	20	NUT	
	1225-2	20	WASHER	
P85-834			RELAY GROUP	47
	54534-7GR4		RELAY GR	
	42839-5	20	NUT	
	1225-2	20	WASHER	
P85-835	54541-12GR1		FINGER	52, 128,132
P85-836	54541-13GR1		FINGER	53
P85-837	54543		BOLT	48

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ELECTRIC SWITCH MACHINES - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P85-838			SNUB DEVICE	47
	54544 GR1		SNUB DEVICE	
	42333-60		NUT	
P85-839	54549 GR2		GEAR	21, 139
P85-840	54549-1GR2		GEAR	21, 140
P85-841	54550		HANDLE	48
P85-842	54556-5		INSULATION	52, 127,131
P85-843	54572-18		BOARD	48
P85-844	54578		BEARING	22
P85-845	54578-2		BEARING	22, 139
P85-846	31084 GR1		PLATE	22, 139
P85-848	54584-1		YOKE	21
P85-849	54584-2		YOKE	21, 139
P85-850	54584-9		YOKE	21
P85-851	54590-3GR1		LEVER	21
P85-852	54591 GR2		SHIFTER	21
P85-853	54592 GR6		CRANK	21
P85-854	52557-17		LEVER	22
P85-855			SWITCH	15
	54594-3GR1		SWITCH	
	6714-335		BUSHING	
P85-857	54594-2GR1		SWITCH	15
P85-858	54595 GR1		BRACKET	31
P85-859	54596 GR1		LEVER	16
P85-862	54920-1GR1		PLATE	26
P85-863	54920-1GR2		PLATE	26
P85-864			PLATE	25
	305-505		PLATE	
	305-506	2	PLATE	
	305-696		PLATE	
	29757-38	2	SCREW	
	01273-6	2	WASHER	
P85-865			PLATE	25
	305-500		PLATE	
	305-501	2	PLATE	
	305-502		PLATE	
	29757-38	2	SCREW	
	01273-6	2	WASHER	
P85-867	55035-3GR24		TERM BOARD	63
P85-869	55153 GR1		ARM	39, 123
P85-870	03408-12		SCREW	33, 51,97,98,128,131
P85-873	55912-14		PLATE	52, 128,132
P85-874	55914-3		PLATE	51, 128,132
P85-876	56014-12GR1		CORE&BRKT	53
P85-878	56140-19		BLOCK	63
P85-879	20132-11		PLUG	
P85-880	56242-24		JACK	65
P85-881	56931 GR1		ROD	43
P85-882	56931 GR2		ROD	43
P85-883	56931 GR3		ROD	43
P85-884	56931 GR9		ROD	43
P85-885			FRAME	25
	57028 GR1		FRAME	
	4811-4	2	SCREW	
	4811-3	2	SCREW	
	01273-12	2	WASHER	
	645-10	2	NUT	
	01273-11	2	WASHER	
P85-886			FRAME	25
	57028 GR9		FRAME	
	4811-4	2	SCREW	
	4811-3	2	SCREW	
	01273-12	2	WASHER	
	645-10	2	NUT	
	01273-11	2	WASHER	
P85-887			FRAME	25
	57028 GR3		FRAME	
	4811-4	2	SCREW	
	4811-3	2	SCREW	
	01273-12	2	WASHER	
	645-10	2	NUT	
	01273-11	2	WASHER	
P85-888			FRAME	25
	57028 GR6		FRAME	
	4811-4	2	SCREW	
	4811-3	2	SCREW	
	01273-12	2	WASHER	
	645-10	2	NUT	
	01273-11	2	WASHER	

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ELECTRIC SWITCH MACHINES - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P85-889			FRAME	25
	57028 GR8		FRAME	
	4811-4	2	SCREW	
	4811-3	2	SCREW	
	01273-12	2	WASHER	
	645-10	2	NUT	
	01273-11	2	WASHER	
P85-891			FRAME	25
	57028-1GR1		FRAME	
	4811-1	4	SCREW	
	4811-2	2	SCREW	
	3343-31	2	SCREW	
	645-10	6	NUT	
	01273-11	6	WASHER	
	01273-10	2	WASHER	
P85-892			FRAME	25
	57028-1GR2		FRAME	
	4811-2	6	SCREW	
	3343-31	2	SCREW	
	645-10	6	NUT	
	01273-11	6	WASHER	
	01273-10	2	WASHER	
P85-893			FRAME	25
	57028-1GR3		FRAME	
	4811-1	4	SCREW	
	4811-2	2	SCREW	
	3343-31	2	SCREW	
	645-10	6	NUT	
	01273-11	6	WASHER	
	01273-10	2	WASHER	
P85-894			FRAME	25
	57028-1GR4		FRAME	
	4811-2	6	SCREW	
	3343-31	2	SCREW	
	645-10	6	NUT	
	01273-11	6	WASHER	
	01273-10	2	WASHER	
P85-896	57157-3		MAGNET	52, 127, 131
P85-900	58237		SCREW	65
P85-901			FRAME	25
	58847-5GR1		FRAME	
	01273-6	8	WASHER	
	01054	2	BEARING	
	305-501	4	PLATE	
	1601-162	4	WASHER	
	0441-5	4	BOLT	
	305-500	2	PLATE	
	305-502	2	PLATE	
	305-506	4	PLATE	
	305-505	2	PLATE	
	305-696	2	PLATE	
	29757-38	8	SCREW	
	51173-1	2	BLOCK	
	01273-8	4	WASHER	
	0706	4	BOLT	
	51173-11	2	BLOCK	
	3955-20	4	SCREW	
P85-902			FRAME	25
	58847 GR5		FRAME	
	11072-2	4	GIB	
	53721-22	4	CLIP	
	51173-9	2	BLOCK	
	51173-10	2	BLOCK	
	0706	4	BOLT	
	01273-8	4	WASHER	
	54920-1GR2	4	PLATE	
	54920-1GR1	4	PLATE	
P85-903			FRAME	25
	58847-4GR1		FRAME	
	305-501	4	PLATE	
	01054	2	BEARING	
	1601-162	4	WASHER	
	0441-5	4	BOLT	
	305-500	2	PLATE	
	305-502	2	PLATE	
	305-506	4	PLATE	
	305-505	2	PLATE	
	305-696	2	PLATE	
	29757-38	8	SCREW	
	01273-6	8	WASHER	

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ELECTRIC SWITCH MACHINES - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P85-904			FRAME	25
	58847 GR3		FRAME	
	11072-2	4	GIB	
	53721-22	4	CLIP	
	51173-9	2	BLOCK	
	51173-10	2	BLOCK	
	0706	4	BOLT	
	01273-8	4	WASHER	
	54920-1GR2	4	PLATE	
	54920-1GR1	4	PLATE	
P85-908	58898-3		STRIP	52
P85-909	58966-2GR1		CURE	51
P85-910	58967-2		CLAMP	52
P85-912	51352-1GR1		BLOCK	15
P85-913	7670-3		WASHER	16
P85-914			LEVER	17
	53936-16		LEVER	
	6714-335		BUSHING	
P85-915	37976-3		BUSHING	18
P85-916	45048-14		SCREW	18
P85-917	441-268		STUD	21
P85-918	54592 GR3		CRANK	21
P85-919	31942-2		ROLLER	39, 124
P85-920	39157		SCREW	97
P85-921	734-31		LINK	45
P85-922	50563-6		LEVER	45
P85-923	51170		DOG	45
P85-924	12680-1		NUT	53, 128, 132
P85-925	51153-3		COUPLING	29
P85-927	56090-6GR2		HEATER	38
P85-928	56090-20GR1		HEATER	47
P85-929	55291-6		RESISTOR	39, 108
P85-930	0523		SCREW	17
P85-931	0660		SCREW	17
P85-932			COUPLING	109
	45689-22		COUPLING	
	40568-3		NIPPLE	
P85-933	51153-2		COUPLING	
P85-934	51153-4		COUPLING	109
P85-935	29999-15GR1		COIL	
P85-936	29999-15GR2		COIL	
P85-940	6714-335		BUSHING	18
P85-966	1601-162		WASHER	27
P85-971	044		COTTER	118
P85-972	42760-224GR1		CONNECTOR	47
P85-973	42760-224GR2		CONNECTOR	47
P85-974	36593-29		WRENCH	124, 136, 160
P85-977	42760-224GR3		CONNECTOR	7, 9
P85-978	54960-57		SLUG	53, 127, 131
P85-979	51192-14GR1		CONTACT GR	38
P85-980			DETENT COMPLETE	55
	9040 GR2		DETENT	
	9039 GR1		SHIELD	
	58605-37GR1		COVER	
P85-981			DETENT COMPLETE	55
	9040 GR3		DETENT	
	9039 GR1		SHIELD	
	58605-37GR1		COVER	
P85-982	3955-12		SCREW	38
P85-1000	17550-29GR5		HEATER KIT	123
P85-1002	17550-29GR4		HEATER KIT	123
P85-1003	49034-5		NIPPLE	123, 153
P85-1004	30908-117		LUG	121, 143
P85-1005	30908-128		LUG	143
P85-1006	30908-129		LUG	143
P85-1007	30908-131		LUG	143
P85-1008	30908-132		LUG	144
P85-1009	51153-7		COUPLING	143
P85-1010	51153-9		COUPLING	143
P85-1011	026		KEY	135, 140
P85-1012	027		KEY	135
P85-1013	0156-1		PIN	140
P85-1014	01054-2		BEARING	
P85-1015	01054-3		BEARING	118
P85-1016	01054-4		BEARING	117
P85-1017	01054-5		BEARING	118
P85-1018	01284-1		BUSHING-P85-1018	128
P85-1019	03315-32		SCREW	118
P85-1020	1047-1		NUT	143
P85-1021	03410-110		NUT	127
P85-1022	03615-28		SCREW	118
P85-1023	305-717		PLATENEW	118

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CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P85-1024	500-41		PIN	117
P85-1025	500-42		PIN	118
P85-1026	500-44		PIN	136
P85-1028	585-69		SLEEVE	135
P85-1029	586-179		SPRING	128, 132
P85-1030	734-40		LINK	118
P85-1031	739-4		BUSHING	140
P85-1032	786-210		SPRING	124
P85-1034	1889		BOLT	143
P85-1035	1601-2		WASHER	144
P85-1036	3890-10		WASHER	118
P85-1037	3890-11		WASHER	118
P85-1038	3890-12		WASHER	135
P85-1039	4851		SCREW	118
P85-1040	5389-11		TERMINAL	127, 160
P85-1042	5713-68		RING	135
P85-1043	5718-266		PLATE	139
P85-1044	6714-340		BUSHING	135
P85-1045	6954-9		SCREW	135
P85-1046	6983-1		SCREW	117
P85-1047	7350-341		BUSHING	117
P85-1048	9032-2GR1		MAGNET	135
P85-1049	9032-3GR1		MAGNET	136
P85-1050	15350-59		PIN	124
P85-1051	15350-57		PIN	124
P85-1052	15350-58		PIN	124
P85-1053	17188-1		PIN	124
P85-1054	17378-29		STRIP	124
P85-1055	17708-92		SCREW	117
P85-1056	17708-64		SCREW	136
P85-1057	17708-66		SCREW	135
P85-1058	19943-14		RESISTOR	127
P85-1059	20263-2		GEAR	141
P85-1060	20263-8		GEAR	140
P85-1062	21580-1		COIL	136
P85-1063	21580-2		COIL	136
P85-1064	27968-1		LATCH	124
P85-1065	27586		BOLT&NUT	144
P85-1066	29474-58		TUBE	136
P85-1067	30908-57		LUG	144
P85-1068	30908-68		LUG	143
P85-1069	29855-14		HANGER	156
P85-1070	29960-36		ROD	140
P85-1071	30729 GR1		GEAR	135
P85-1072	30729 GR2		GEAR	135
P85-1073	31066-121GR4		COIL	126
P85-1074	31066-122GR4		COIL	128
P85-1075	31066-126GR1		COIL	131
P85-1076	31066-126GR4		COIL	127
P85-1078	34232-32		FITTING	139
P85-1079	34341-4		HEAD	136
P85-1080	34341-5		HEAD	136
P85-1081	34341-6		HEAD	136
P85-1082	35470-71		STOP	123
P85-1083	35470-72		STOP	124
P85-1084	35788-12		SCREW	127, 136
P85-1085	35921-188		SUPPORT	123
P85-1086	35921-190		SUPPORT	124
P85-1087	38104-1GR1		PLATE	117
P85-1089	38146-4GR2		CONTACTOR	131
P85-1090	38146-5GR1		CONTACTOR	127
P85-1091	38165-86		SPACER	135
P85-1093	38214-2GR2		RELAY	131
P85-1094	38214-3GR1		RELAY	127
P85-1095	38489-2GR1		BRACKET	123
P85-1096	42760-227GR1		CONNECTOR	131
P85-1097	42760-227GR2		CONNECTOR	131
P85-1098	42760-233GR1		CONNECTOR	127
P85-1099	42760-233GR2		CONNECTOR	127
P85-1100	45510-8GR2		CAM BAR	118
P85-1101	45512-71GR1		LOCK ROD	143
P85-1102	45519-155		ROD	143
P85-1103	45520-24GR1		COVER	118
P85-1104	45520-30GR1		COVER	121
P85-1105	45525-53		PLATE	143
P85-1106	45532-48		GEAR	135
P85-1107	45532-50		GEAR	135
P85-1108	45532-51		GEAR	135
P85-1109	45533-26		PINION	135
P85-1110	45533-27		PINION	135
P85-1111	45533-29		PINION	135
P85-1112	45535-9		GEAR	118
P85-1114	45536-10		BEARING	118
P85-1115	45538-21		THROW BAR	117
P85-1116			LOCK ROD	143
	45512-73GR1		LOCK ROD	
	0477	4	NUT	
P85-1117	45539-2		COVER	118, 121
P85-1118	46048-10GR7		TERM BLOCK	117
P85-1119	46138-12		PINION	135

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ELECTRIC SWITCH MACHINES - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P85-1120	47544-81		SHAFT	135
P85-1121	51146-4GR1		SHAFT	135
P85-1122	49020-9		ARMATURE	136
P85-1123	49020-10		ARMATURE	136
P85-1124	49413-15		BASE	117
P85-1125	45519-156		ROD	143
P85-1126	49536-98		BEARING	135
P85-1127	49536-100		BEARING	118
P85-1128	49536-101		BEARING	135
P85-1129	49536-102		BEARING	135
P85-1130	49536-103		BEARING	135
P85-1131	50638-4GR1		BEARING	118
P85-1132	49536-113		BEARING	140
P85-1133	49536-115		BEARING	136
P85-1134	49588-27		YOKE	124
P85-1135	49589-104		SPRING	124, 139
P85-1136	50132-3		BLOCK	123
P85-1137	50207-11		GEAR&PINION	135
P85-1138	51114-38		GUARD	117
P85-1139	51114-34		GUARD	118
P85-1141	51146-3GR1		SHAFT	139
P85-1142	51151-1		YOKE	124
P85-1143	51174-1		ROLLER	124
P85-1144	51176-38		ROD	144
P85-1145	51192-19GR1		CONTACT GROUP	123
P85-1146	51192-19GR2		CONTACT	123
P85-1147	51195-24GR1		FINGER	123
P85-1148	51195-25GR1		FINGER	123
P85-1149	51196-12		FINGER	124, 139
P85-1150	51197-4		SPRING	124
P85-1151	51197-5		SPRING	124
P85-1152	51326-6GR1		MOVEMENT	123
P85-1153	51327-23GR1		DETECTOR ROD	143
P85-1155	52022-11		BOLT	136
P85-1156	52084-15GR1		BLOCK	124, 139
P85-1158	52256-19GR2		BLOCK	
P85-1159	52256-20GR1		BLOCK	127
P85-1160	52388-7		CAM	139, 140
P85-1161	52388-8		CAM	140
P85-1162	52392-6		BRUSH	136
P85-1163	52393-5		BRUSH	136
P85-1164	52419-21		CAP	136
P85-1165	52479-27		SHOCK MOUNT	117
P85-1166	52479-28		SHOCK MOUNT	117
P85-1167	52557-18		LEVER	140
P85-1168	52557-19		LEVER	140, 143
P85-1169	52595-19		MOTOR	136
P85-1170	52595-20		MOTOR	136
P85-1171	53879-30		SHIM	118
P85-1172	53908-9		SHAFT	140
P85-1173	53908-10		SHAFT	140
P85-1174	54314-1		PLATE	124
P85-1175	54314-2		PLATE	118
P85-1176	54315-1		BRACKET	139
P85-1177	54319		BRACKET	140
P85-1178	54477-10GR1		CRANK	117
P85-1181	0562-1		KEY	135
P85-1182	59839-2		FRAME	135
P85-1184			CONTROLLER	127
	54532-17GR1		CONTROLLER	
	03610-116	8	SCREW	
	53029-69	8	WASHER	
	52479-27	2	SH MOUNT	
	52479-28	2	SH MOUNT	
	01273-6	4	WASHER	
	03615-28	4	SCREW	
	42843-1	6	NUT	
	1225-2	6	WASHER	
	4906-148		CONNECTOR	
	38216-116GR1		CABLE	
P85-1185			CONTROLLER	127
	54532-17GR2		CONTROLLER	
	03610-116	8	SCREW	
	53029-69	8	WASHER	
	52479-27	2	SH MOUNT	
	52479-28	2	SH MOUNT	
	01273-6	4	WASHER	
	03615-28	4	SCREW	
	42843-1	6	NUT	
	1225-2	6	WASHER	
	4906-148		CONNECTOR	
	38216-116GR1		CABLE	
P85-1187	54577-3		GEAR	141
P85-1188	54578-4		BRACKET	140

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ELECTRIC SWITCH MACHINES - PARTS LIST

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P85-1189	54580-10		STAND	141
P85-1190	54592-1GR2		CRANK	140
P85-1191	54590-7GR1		LEVER	139
P85-1192	54591-1GR1		SHIFTER	139
P85-1193	55241-11		CLUTCH	135
P85-1195	55863-79		PUSHER	139
P85-1196	56021-20		BRACKET	124
P85-1197	56931-2GR1		ROD	144
P85-1198	57228-71		WIRE CHASE	117
P85-1199	58850-2GR2		PLUNGER	124
P85-1200	80557-76GR1		CABLE SPEC NO FT (SEE A85)	
P85-1203	65156-123GR1		CABLE	
P85-1205	55409-15GR1		CORD	
P85-1210			BOLT	
	38186-4		BOLT	
	01273-14		WASHER	
	47191-9		NUT	
	046		COTTER	
P85-1211			BOLT	
	1889		BOLT	
	0272-9		NUT	
	01273-13		WASHER	
P85-1212			BOLT & NUT	
	27586		BOLT & NUT	
	01273-13		WASHER	
	1601-2		WASHER	
P85-1213			BOLT	
	1889-8		BOLT	
	0272-9		NUT	
	01273-13		WASHER	
P85-1214	51153-10		COUPLING	143
P85-1216	36183-59		GAUGE	
P85-1219	0342		RIVET	155
P85-1220	0712-5		SCREW	155
P85-1222	01232-1		TIE	156
P85-1223	01232-3		TIE	156
P85-1224	03415-32		SCREW	159
P85-1226	03606-32		SCREW	159
P85-1227	121-29		ROD	153
P85-1228	121-30		ROD	153
P85-1229	231-2GR1		PLUNGER	159
P85-1230	401-875		NAME PLATE	155
P85-1231	401-878		NAME PLATE	155
P85-1233	523-11		NUT	159, 160
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P85-1235	626-239		WASHER	156
P85-1236	641-19		CLAMP	160
P85-1237	730-113		PIN	153
P85-1238	786-389		SPRING	159
P85-1239	786-384		SPRING	156
P85-1240	959-5		JAW	153
P85-1242	1633-17		PIN	156
P85-1243	2669-44		CAP	159
P85-1244	2895-2		WASHER	159
P85-1245	3018-39		SCREW	156
P85-1246	5656-111		WASHER	153
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P85-1248	56604-111GR1		PLATE	155
P85-1249	6714-347		BUSHING	156
P85-1250	6714-348		BUSHING	159
P85-1251	6714-357		BUSHING	153
P85-1252	6714-358		BUSHING	153
P85-1253	8942-136		BUSHING	156
P85-1254	8942-137		BUSHING	156
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P85-1256	19943-12		RESISTOR	160
P85-1257	19943-28		RESISTOR	160
P85-1258	49102-12GR1		LAMP	156
P85-1259	20466-47GR6		PLATE	159
P85-1260	20466-47GR2		PLATE	159
P85-1261	20466-47GR7		PLATE	159
P85-1262	20466-47GR4		PLATE	159
P85-1263	20468-9		CONTACTOR	160
P85-1264	20664-3GR1		SHAFT	159
P85-1265	21198-3GR1		SWITCH	159
P85-1266	21198-5GR2		SWITCH	159
P85-1267	21198-5GR1		SWITCH	159
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P85-1274	31147-3		GASKET	155
P85-1275	31147-4		BEARING	155
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P85-1283	31147-12		BEARING	155
P85-1284	31147-13		DRIVER	155
P85-1285	31147-14		GEAR	155
P85-1286	31147-15		BEARING	155
P85-1289	34322-121		XFMR	160
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P85-1291	35934-31		SWITCH	159
P85-1293			BOLT COMPLETE	
	38186-78		BOLT	
	626-244	5	WASHER	
	42333-4		NUT	
	626-217		WASHER	
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P85-1300	45520-29GR1		COVER	156
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P85-1302	45539-4		COVER	159
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P85-1305	46084-27		NUT	159
P85-1306	49536-108		BEARING	156
P85-1307	49536-121		BEARING	160
P85-1308	49630-6		SHAFT	159
P85-1309	50571-6		ARM	159
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P85-1314	53119-26		LENS	156
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P85-1317	54580-11		STAND	156
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P85-1320	55241-12		CLUTCH	159
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P85-1340	425-29		KEY	136
P85-1341	1581-51		SPRING	118
P85-1342	22666-34		STUD	118
P85-1343	37412-242		SHIELD	118
P85-1344	51114-39		GUARD	118
P85-1345	52281-86		CAPACITOR	124
P85-1346	57066-12GR1		SUPPRESSOR	123
P85-1347	59649-19		KIT	135
P85-1348	2813-3		NUT	153
P85-1349	38489-7GR1		BRACKET	159
P85-1351	49589-106		SPRING	160
P85-1352	51196-13		FINGER	160
P85-1353	29960-37		PLUNGER	
P85-1354	493-27		WASHER	34
P85-1355	17188-26		PIN	124
P85-1356	17550-79GR1		MOD KIT	
P85-1357	59517 GR1		TEST BAR	
P85-1358	585-72		SLEEVE	139
P85-1359	36450-222		RELAY	160
P85-1360	52918-9GR2		TERMINAL BOX	153
P85-1361	0827		NUT	153
P85-1362	0825		BUSHING	153
P85-1363	57452 GR1		ADAPTER	153
P85-1364	6714-366		BUSHING	153
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P85-1367	56090-33GR1		HEATER	159
P85-1368	57010-2		SHOE	159
P85-1369	2669-41		CAP	159
P85-1370	46084-29		STRAP NUT	160
P85-1371	35845-592		PLATE	160
P85-1372	626-217		WASHER	160
P85-1373	626-244		WASHER	160
P85-1374	39719-62		PRESSURE PLATE	160
P85-1375	590-113		DISC SPRING	160

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ELECTRIC SWITCH MACHINES - PARTS LIST

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P85-1376	38165-97		SPRING GUIDE	160
P85-1377	590-107		TAB WASHER	160
P85-1378	55478-71GR1		BRACKET	160
P85-1379	55291-22		RESISTOR	160

CATALOG SECTION P87
PARTS LIST
Hand-Operated Switch Machines
Model 9

FOR ASSEMBLIES, SEE CATALOG SEC. 87

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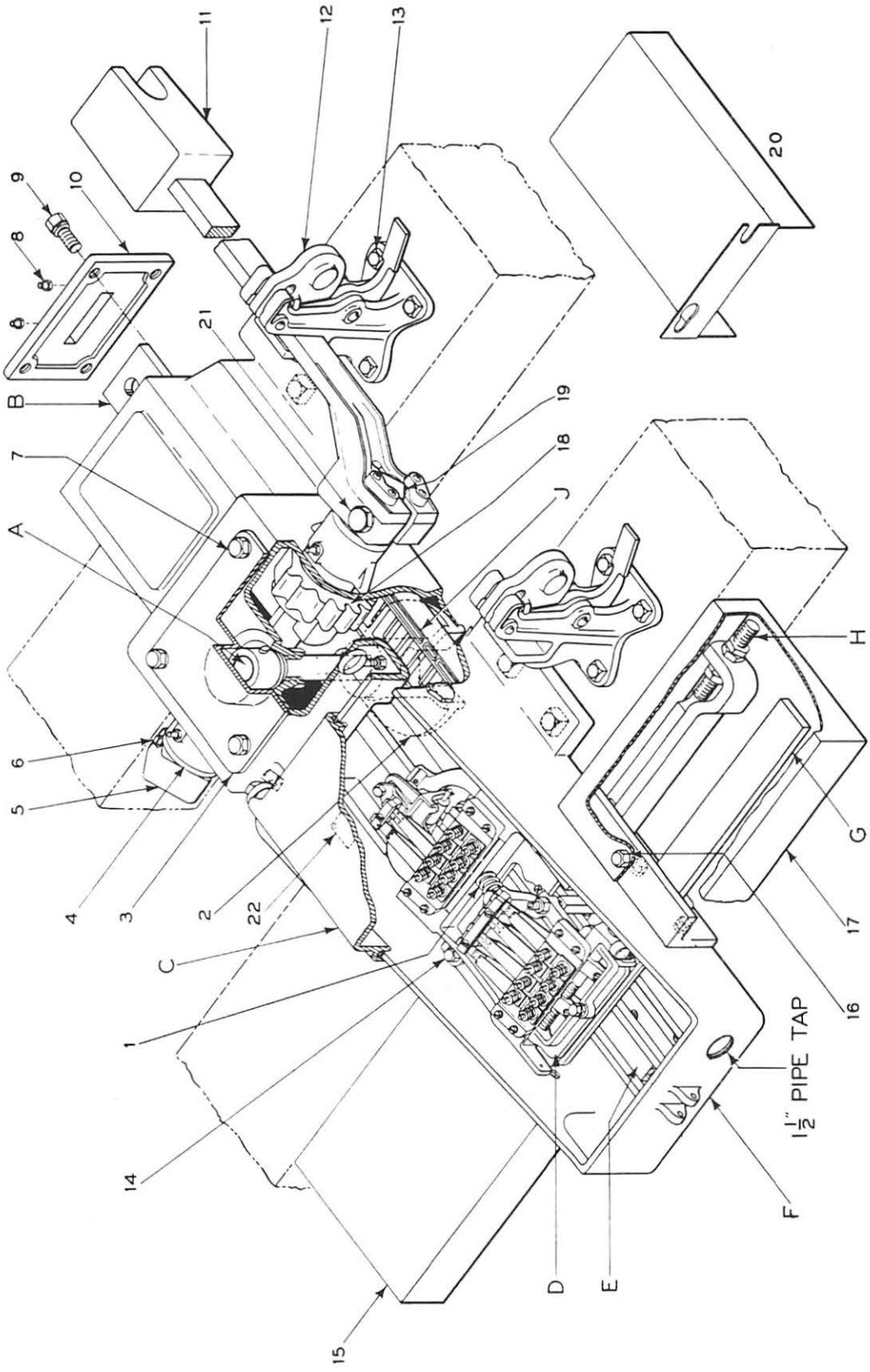


Model 9 switch machine.

Model 9 Switch Machine

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	SHAFT, for order references see page 8	
B	PLUNGER COMPLETE, for normal mechanical locking	P87-142
B1	As above, except for normal and reverse mechanical locking	P87-143
B2	Same as Ref. B, except for separately controlled locking	P87-144
C	COVER COMPLETE, for references see page 8	
D	CONTROLLER COMPLETE, for references see page 10	
E	LATCH BAR COMPLETE, for references see page 8	
F	CASE COMPLETE, for references see page 6	
G	DETECTOR BAR COMPLETE, for references see page 14	
H	LOCK ROD COMPLETE, for references see page 14	
J	RACK COMPLETE, with rollers, has driving lug for integral locking machines	P87-120
J1	As above, except without driving lug, for separately controlled locking machines	P87-121
1	SPRING, for latch bar	P50-714
2	CRANK, for escapement	P50-794
3	CAP, for covering opening when target staff is not used	P50-751
4	BUSHING, for shaft Ref. 19	P50-823
5	COLLAR, for shaft Ref. 19	P50-750
6	BOLT & NUT, for fastening collar Ref. 5 to shaft Ref. 19	P50-764
6A	WASHER, lock, for above	P81-122
7	SCREW, for fastening plate Ref. 3 to case	P50-726
7A	WASHER, lock, for above	P26-156
8	FITTING, grease, for plunger, two required	P85-380
9	SCREW, for fastening plate Ref. 10 to case	P87-108
9A	WASHER, lock, for above	P50-700
10	PLATE, guide for plunger Ref. B	P87-123
11	ARM, hand-throw lever	P50-806
12	LATCH STAND COMPLETE, for references see page 18	
13	SCREW, lag, for mounting latch stands to ties	P3-103
14	SCREW, for mounting controller	P85-261
14A	WASHER, lock, for above	P81-122
15	GUARD, for track side of machine	P50-802
16	SCREW, for mounting guards	P50-721
17	GUARD, for field side of machine	P50-801
18	SECTOR, for operating rack	P50-746
19	SHAFT, for sector	P50-822

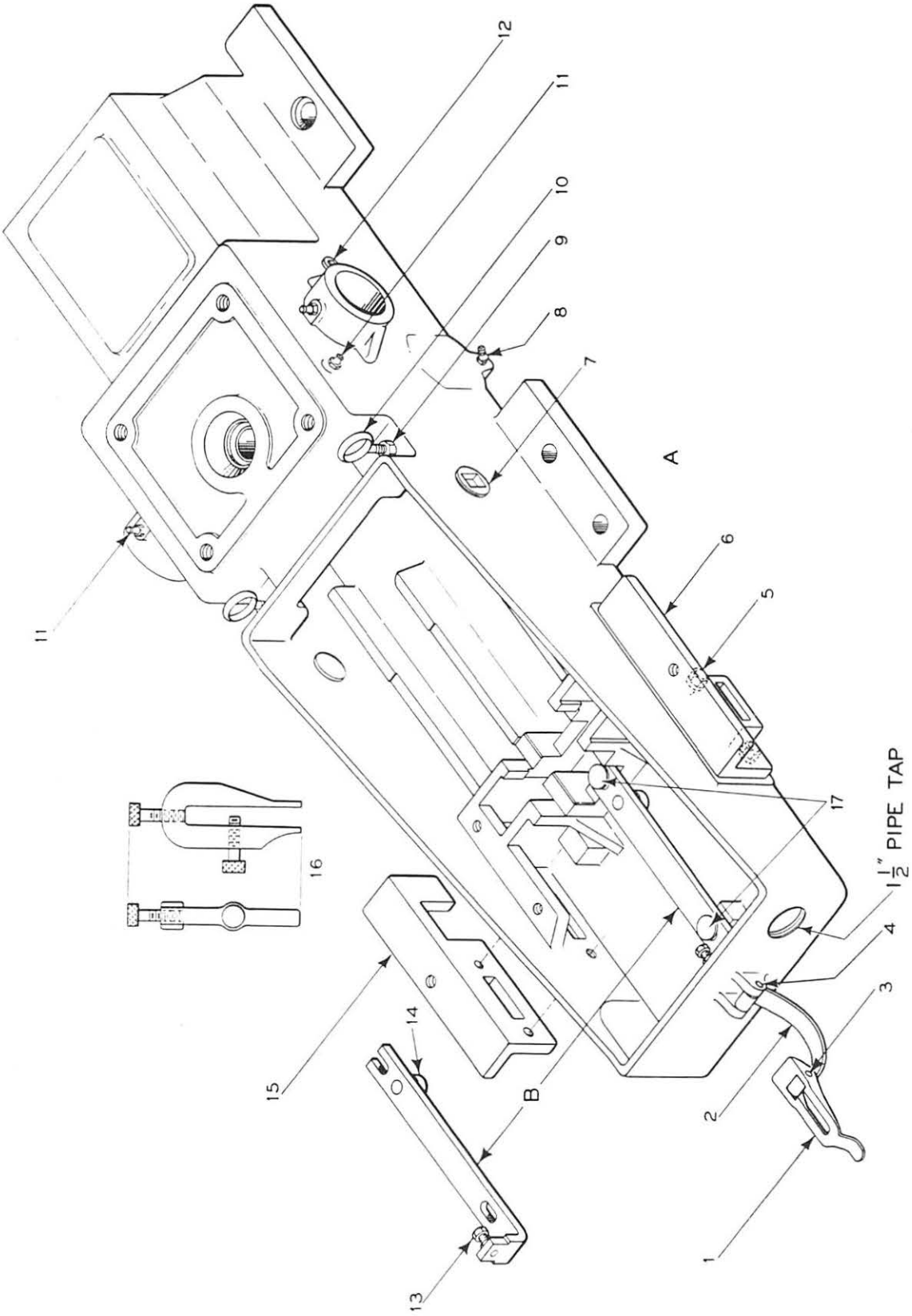
Model 9 Switch Machine

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
20	GUARD, for plunger Ref. C	P87-137
21	BOLT, for fastening arm to shaft	P50-716
21A	NUT, for above	P50-713
21B	WASHER, lock, for above	P85-105
22	NAME PLATE	P87-148
22A	SCREW, for above	P50-830

Memoranda



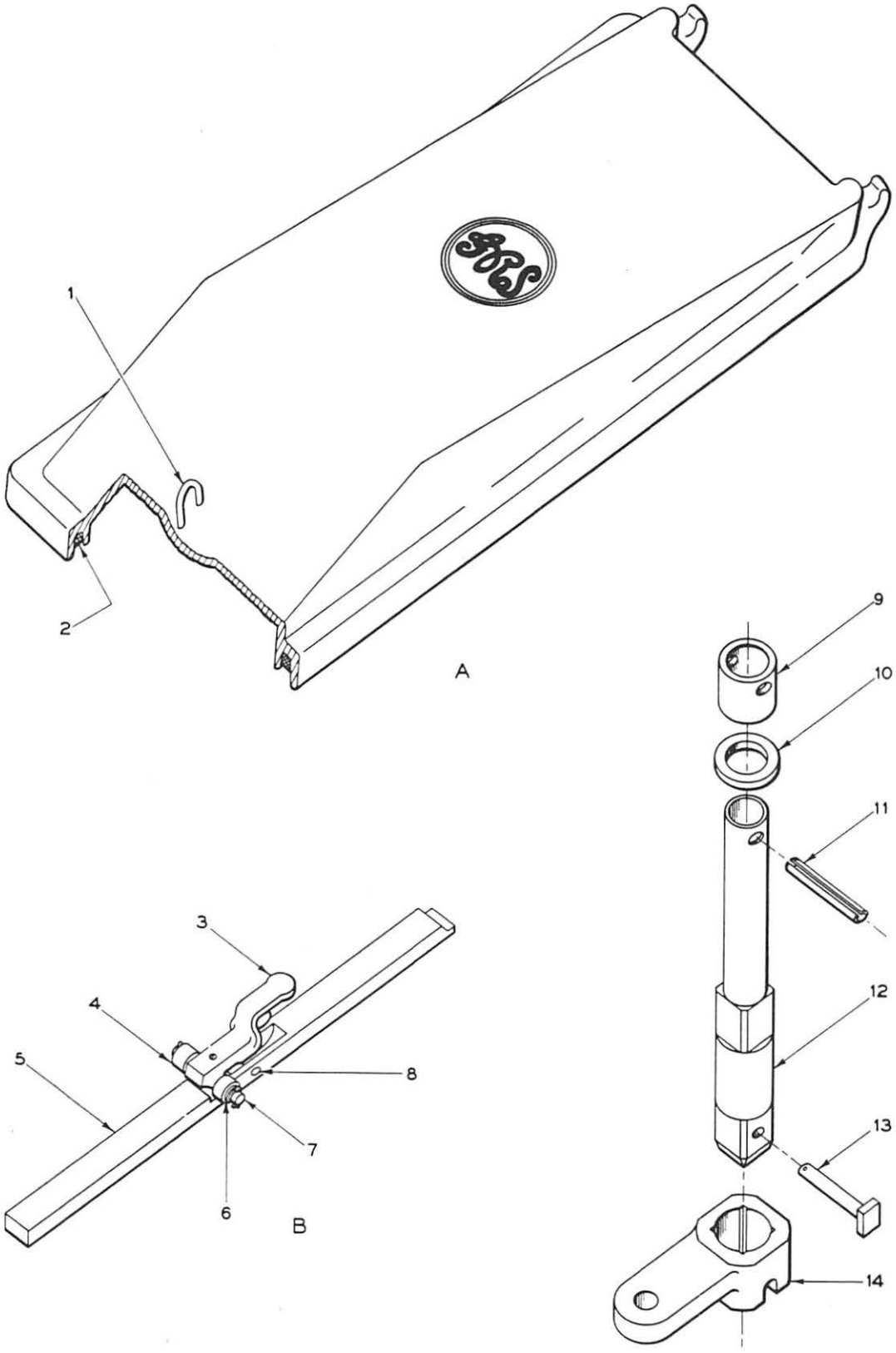
Case.

Case

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	CASE COMPLETE, for use with single lock rod	P87-124
A1	As above, except for use with double lock rod	P87-125
B	BAR COMPLETE, for controller	P50-795
1	HASP, for cover	P81-165
2	STRAP, for hasp	P50-754
3	RIVET, for fastening hasp to strap	P81-116
4	RIVET, for fastening strap to case	P50-703
5	SCREW, for fastening plates Ref. 6 and 15 to case	P50-403
5A	WASHER, lock, for above	P50-401
6	PLATE, for use on right-hand side of switch machine, has opening for detector bar and lock rod	P50-783
7	PLUG, for each side of case	P87-116
8	FITTING, grease, for lower shaft bushing	P50-753
9	NUT, for eyebolt	P50-717
10	EYEBOLT, for cover	P50-758
11	FITTING, grease, for bushings and target staff	P85-378
12	PLUG, pipe, for case	P85-127
13	SCREW, for bar	P50-722
13A	NUT, for above	P85-455
14	ROLLER, for bar Ref. B	P50-747
14A	STUD, for above	P50-706
14B	WASHER, for above	P50-719
15	PLATE, for use on left-hand side of switch machine, has openings for detector bar and lock rod	P50-784
16	GAUGE, for checking point detection	P50-756
17	STUD, for bar Ref. B	P50-731



DETAIL PARTS

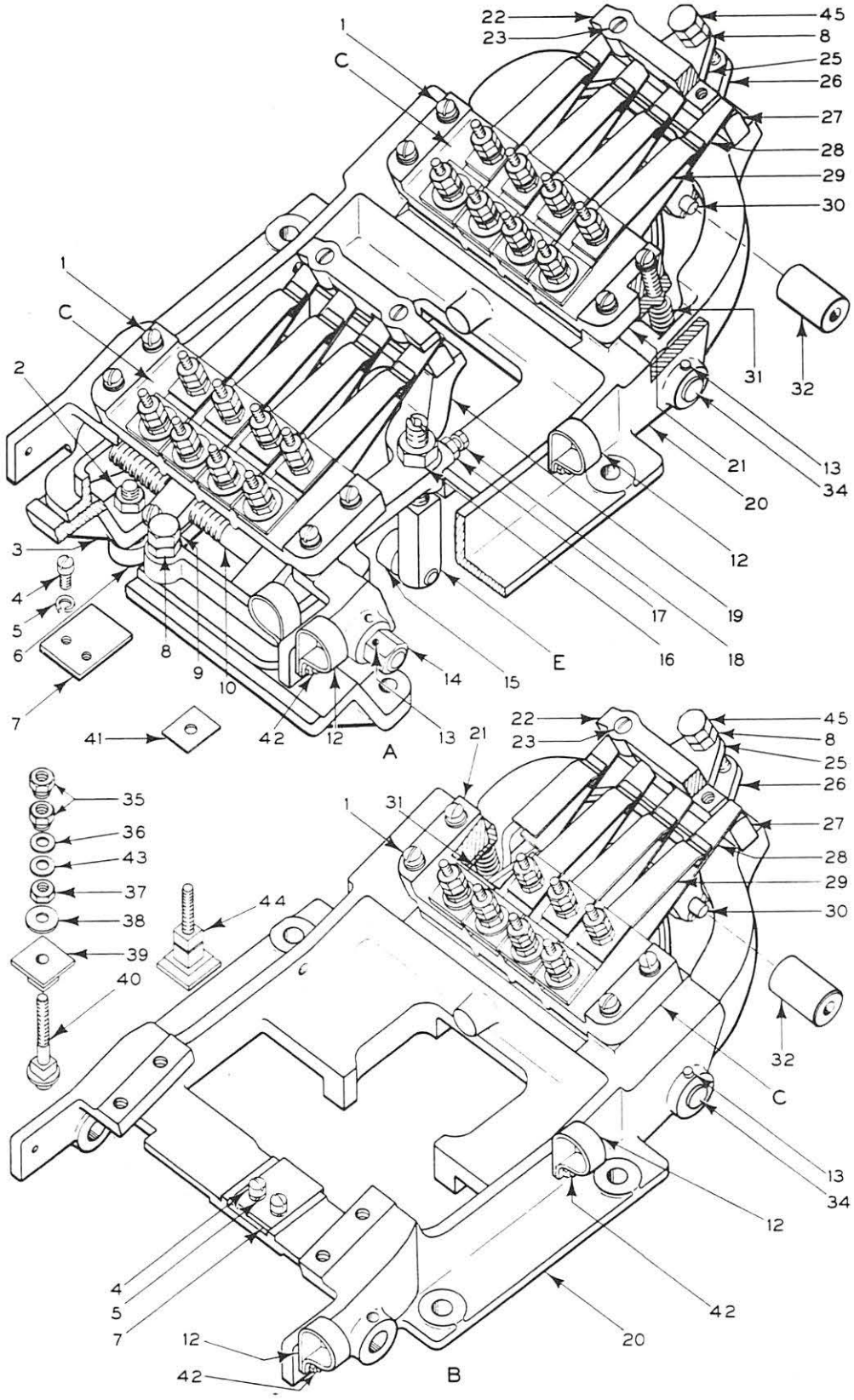
Model 9 switch machine.

Model 9 Switch Machine

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	COVER COMPLETE, for switch machine	P50-788
B	LATCH BAR COMPLETE	P50-812
1	STAPLE, for cover	P81-141
2	GASKET, 6'-0" long, for cover. Specify number of feet	P50-763
3	LATCH, for bar	P50-814
4	ROLLER, for bar	P50-748
5	BAR, only, for bar Ref. B	P50-819
6	WASHER, for rollers	P50-727
7	PIN, for rollers	P50-707
8	PIN, for fastening latch to bar	P50-744
9	COLLAR, for shaft Ref. 12	P50-705
10	WASHER, for use under collar Ref. 9	P50-787
11	PIN, roll, for fastening collar Ref. 9 to shaft Ref. 12	P50-732
12	SHAFT, only	P87-149
13	PIN, sq. hd., for fastening crank Ref. 14 to shaft	P87-105
14	CRANK, only	P87-107



Circuit controllers.

Circuit Controllers

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	CIRCUIT CONTROLLER COMPLETE, for normal and reverse detection, has two normal contacts made and two open, also two reverse contacts made and two open. Does not include stud Ref E	P87-139
A1	Same as Ref. A, except equipped to check plunger in reverse position	P87-140
B	CIRCUIT CONTROLLER COMPLETE, for normal detection only, has two contacts made and two open	P87-138
C	CONTACT GROUP COMPLETE, normal or reverse for controller	P87-126
E	STUD COMPLETE, for use with normal and reverse controllers Ref. A1	P87-141
1	SCREW, for mounting contact groups	P50-810
1A	WASHER, lock, for above	P81-121
2	NUT, for stud Ref. 6	P50-807
2A	WASHER, lock, for above	P81-190
3	CLAMP, for stud Ref. 6	P50-824
4	SCREW, for latch plate	P50-811
5	WASHER, lock, for screw Ref. 4	P81-121
6	STUD COMPLETE, for reverse controller	P50-805
7	PLATE, latch	P50-826
8	NUT, for screws Ref. 9	P85-456
9	SCREW, for adjusting clamp Ref. 3	P50-779
10	SHAFT, for circuit controller	P50-820
12	CLIP, cable, for wires	P3-131
13	PIN, roll, for sleeve Ref. 14 and shaft Ref. 34	P62-238
14	SLEEVE, for ends of shaft	P50-710
15	ROLLER, for stud Ref. E	P87-118
15A	STUD, for above	P87-110
16	NUT, for stud Ref. E	P87-127
17	NUT, for screw Ref. 18	P87-128
18	SCREW, for stud Ref. E	P87-111
19	ROCKER, reverse, for controller	P50-818
20	FRAME, for controllers	P50-817
21	BLOCK, insulating, for fingers	P50-770
22	BLOCK, upper, for fingers	P50-771
23	SCREW, for mounting block Ref. 22	P50-775
25	ROCKER, normal, for controller	P87-145
26	ROCKER, normal, for controller	P87-146
27	BLOCK, lower, for controller	P50-772

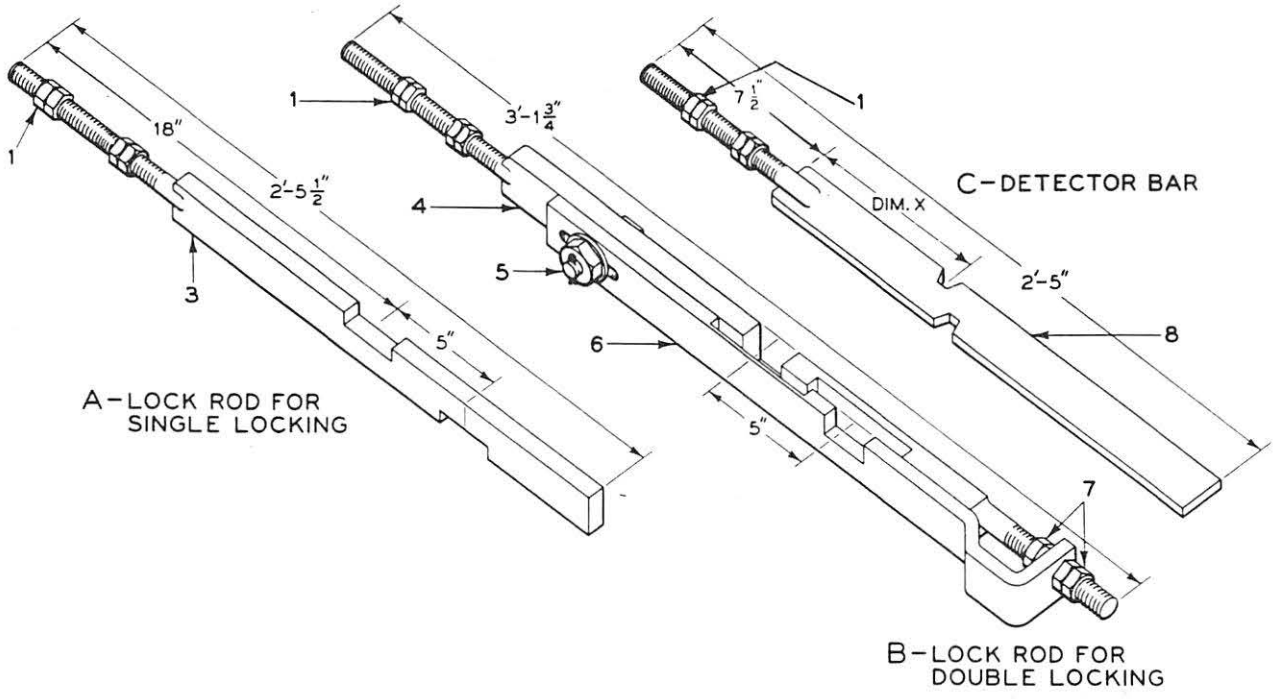
Circuit Controllers

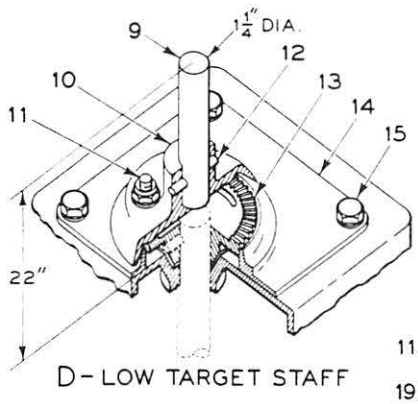
Parts List

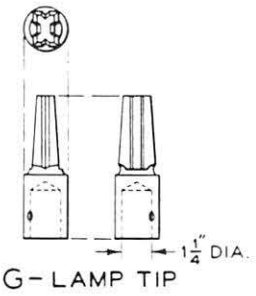
Order by catalog number and name shown in bold type

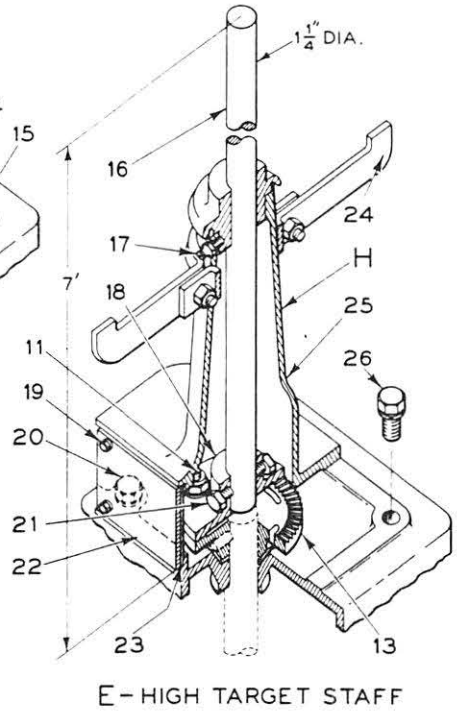
REF.	NAME	CATALOG NUMBER
28	CONTACT SPRING COMPLETE, movable	P50-766
29	CONTACT SPRING COMPLETE	P50-767
30	PIN, for roller Ref. 32	P87-103
31	SPRING, for rockers	P50-715
32	ROLLER, for rocker	P87-117
34	SHAFT, for controllers	P87-147
35	NUT, for terminal posts	P76-131
36	WASHER, for terminal posts.	P76-108
37	NUT, for terminal posts	P65-585
38	WASHER, for terminal posts.	P50-774
39	BUSHING, insulating, for terminal posts	P50-773
40	SCREW, used as terminal post	P50-768
41	WASHER, for terminal posts	P50-718
42	SCREW, for fastening cable clips to frame	P87-112
42A	NUT, for above.	P50-709
43	WASHER, lock, for terminal posts	P85-804
44	SCREW, used as terminal post	P50-769
45	SCREW, for rocker Ref. 25	P85-130

Memoranda









Lock rod, detector bars, target and target staffs.

Lock Rods, Detector Bars, Target and Target Staffs

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	LOCK ROD, for single locking; reversible, for either open or closed point side. Order lug from page 18	A87-230
B	LOCK ROD, for double locking; for left-hand machine with left-hand point normally closed, has total adjustment of 4" to 6". Order lug from page 18.	A87-231
B1	LOCK ROD, for double locking; for left-hand machine with left-hand point normally open. Order lug from page 18	A87-232
B2	LOCK ROD, for double locking; for right-hand machine with right-hand point normally closed; has total adjustment of 4" to 6". Order lug from page 18.	A87-233
B3	LOCK ROD, for double locking; for right-hand machine with right-hand point normally open. Order lug from page 18	A87-234
C	DETECTOR BAR, for closed point side; for right - or left-hand layout. Dimension "X" = 9 1/2". Order lug from page 18	A87-239
C1	DETECTOR BAR, for open point side; for right - or left-hand layout. Dimension "X" = 14 1/2". Order lug from page 18	A87-241
D	LOW TARGET STAFF COMPLETE, 1-1/4" dia., not drilled for target or lamp tip. Includes drive and driven couplings and all necessary hardware	A87-250
E	HIGH TARGET STAFF COMPLETE, 1-1/4" dia., not drilled for target or lamp tip. Includes drive and driven couplings, pedestal, and all necessary hardware. May be shortened in the field as desired	A87-253
G	LAMP TIP, for low or high target staffs, complete with bolt, nut and washer	A87-259
H	PEDESTAL COMPLETE, includes Refs. 17, 19, 22, 23, 24 and 25	P50-800
1	NUT, 1" - 8, for lock rods and detector bars	P91-144
3	ROD, only, for Ref. A	P50-799
4	ROD, only, for Ref. B	P87-134
4A	As above, except for Ref. B1.	P87-136
4B	Same as Ref. 4, except for Ref. B2	P87-133
4C	Same as Ref. 4, except for Ref. B3	P87-135
5	BOLT, for lock rods	P87-113
5A	NUT, for above	P91-220
5B	WASHER, for above	P50-100
6	PLATE, for Ref. B	P87-132
6A	As above, except for Ref. B1.	P87-131
6B	Same as Ref. 6, except for Ref. B2	P87-130
6C	Same as Ref. 6, except for Ref. B3	P87-129
7	NUT, 3/4" - 10, for lock rods	P85-250

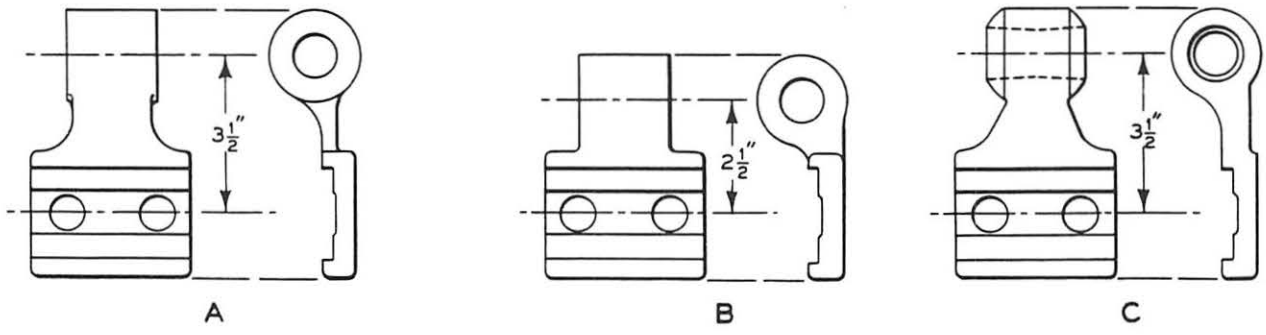
Lock Rods, Detector Bars, Target and Target Staffs

Parts List

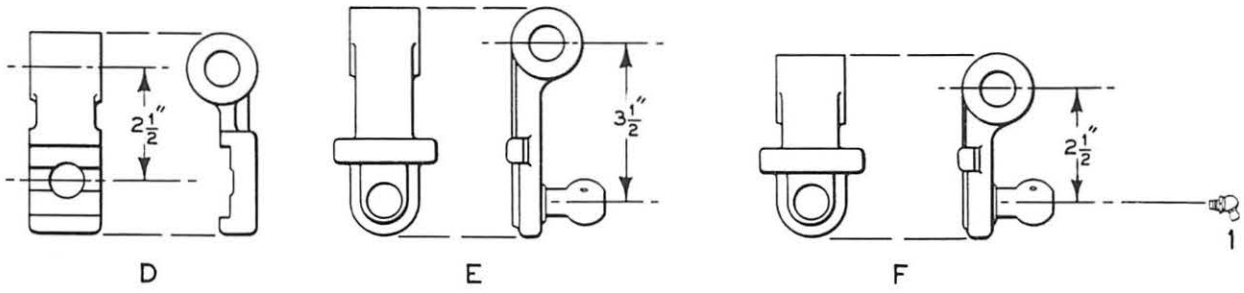
Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
8	ROD, only, for Ref. C	P50-797
8A	ROD, only, for Ref. C1	P50-798
9	STAFF, only, 1-1/4" dia., 22" long	P50-825
10	COUPLING, for staff	P50-792
11	BOLT, for fastening couplings Refs. 10 and 16 to shaft	P50-780
11A	NUT, for above	P50-215
11B	WASHER, for above	P50-737
11C	WASHER, lead, for above	P50-738
12	PIN, roll, for fastening coupling to shaft	P50-733
13	COUPLING, for shaft	P50-790
14	PLATE	P50-782
15	SCREW, for fastening plate to switch machine	P50-726
15A	WASHER, lock, for above	P26-156
16	STAFF, 1-1/4" dia. x 7'-0 long	P50-796
17	FITTING, grease, for shaft	P85-378
18	COUPLING, for shaft	P50-791
19	SCREW, for cover plate	P50-809
20	SCREW, for fastening pedestal to switch machine	P50-761
20A	WASHER, lock, for above	P50-700
21	BOLT, for fastening coupling Ref. 18 to staff	P85-413
21A	NUT, for above	P50-755
21B	WASHER, lock, for above	P81-122
22	PLATE, cover	P50-724
23	GASKET, 2'-10-1/2" long, for plate. Specify number of feet	P50-778
24	STEP COMPLETE, for pedestal	P50-745
25	PEDESTAL, only	P50-793
26	SCREW, for fastening pedestal to switch machine	P50-730
26A	WASHER, lock, for above	P50-700

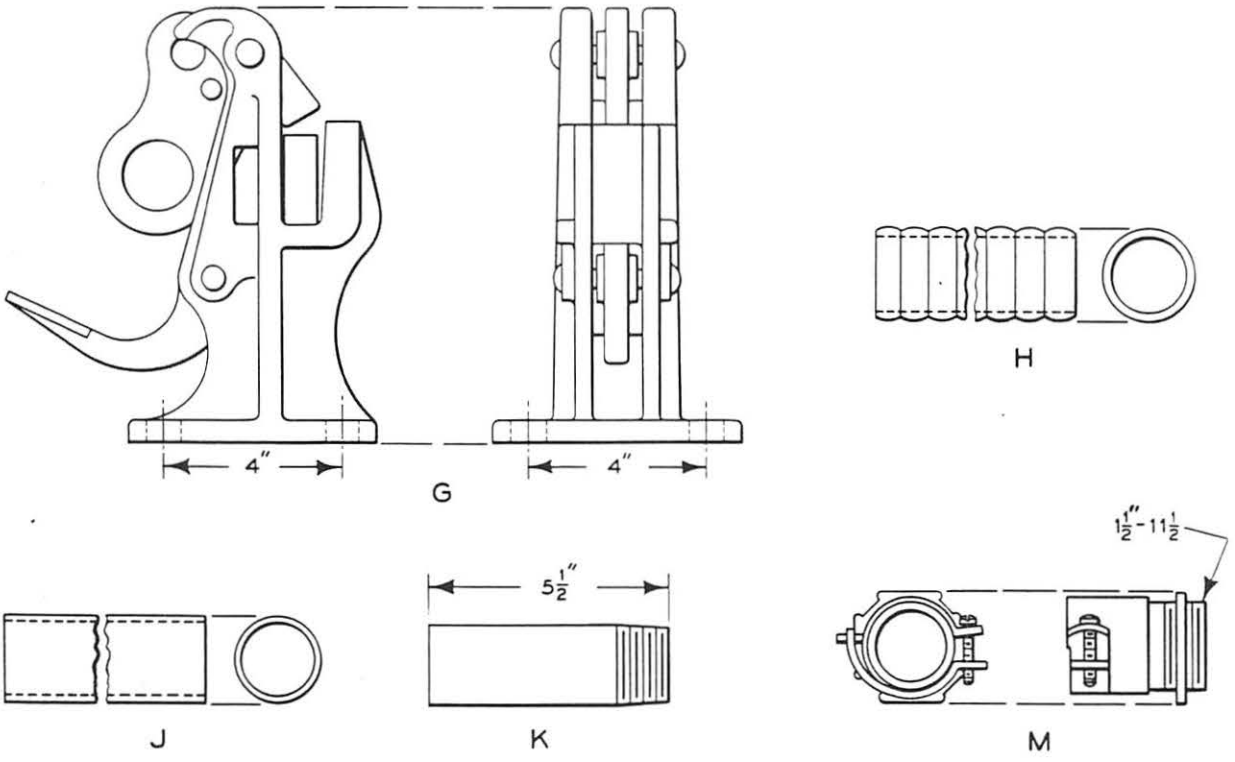
Memoranda



LOCK ROD LUGS



DETECTOR BAR LUGS



Accessories for Model 9 switch machines.

Accessories for Model 9 Switch Machines

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	LUG, 3-1/2" spacing, for 1" dia. lock rod	A85-560
B	LUG, 2-1/2" spacing, for 1" dia. lock rod	A85-561
C	LUG, 3-1/2" spacing, swivel type, for 1" dia. lock rod, includes cup nuts	A85-562
D	LUG, 2-1/2" spacing, for 1" dia. detector bar	A87-179
E	LUG, 3-1/2" spacing, for 1" dia. detector bar	A87-181
F	LUG, 2-1/2" spacing, for 1" dia. detector bar	A87-185
G	LATCH STAND COMPLETE, for hand-throw lever . . . . . Two required for machines without electric locking. One required for machines having normal electric locking only. None required for machines with normal and reverse electric locking (tandem).	A87-191
H	CONDUIT, 1-1/2" flexible, length 3'	A85-868
J	CONDUIT, 1-7/8" I. D., solid rubber, length 3'	A85-520
K	PIPE NIPPLE, 1-1/2" pipe thread for 1-7/8" I. D.	A85-867
M	COUPLING, 1-1/2" pipe thread for 1-1/2" flexible conduit.	A85-866
1	FITTING, grease, for detector lugs	P87-101

Memoranda

CATALOG SECTION P87

CROSS - INDEX

MODEL 9 SWITCH MACHINE

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P87-101	34232-24		FITTING	19
P87-103	491-4		PIN	12
P87-105	730-129		PIN	4, 9
P87-107	2872-9		CRANK	9
P87-108	2891-8		SCREW	3
P87-110	9665-29		STUD	11
P87-111	12527-5		SCREW	11
P87-112	13006-22		SCREW	12
P87-113	14162		BOLT	15
P87-116	18524-7		PLUG	7
P87-117	31942-68		ROLLER	12
P87-118	31942-89		ROLLER	11
P87-120	49610 GR1		RACK	3
P87-121	49610 GR2		RACK	3
P87-123	49628-20		PLATE	3
P87-124	49680-2GR1		CASE	7
P87-125	49680-2GR2		CASE	7
P87-126	50428-1GR3		CONTACT GR	11
P87-127	50451		NUT	11
P87-128	48569-1		NUT	11
P87-129	50841		PLATE	15
P87-130	50841-1		PLATE	15
P87-131	50841-2		PLATE	15
P87-132	50841-3		PLATE	15
P87-133	50842-13		ROD	15
P87-134	50842-19		ROD	15
P87-135	50842-25		ROD	15
P87-136	50842-28		ROD	15
P87-137	51114-30		GUARD	4
P87-138	51449 GR3		CONTROLLER	11
P87-139	51449-1GR3		CONTROLLER	11
P87-140	51449-1GR6		CONTROLLER	11
P87-141	51451 GR1		STUD	11
P87-142	57323-2GR1		PLUNGER	3
P87-143	57323-8GR1		PLUNGER	3
P87-144	57323-9GR1		PLUNGER	3
P87-145	57338-3		ROCKER	11
P87-146	57338-4		ROCKER	11
P87-147	57359-2		SHAFT	12
P87-148	401-253		PLATE	4
P87-149	49630-3		SHAFT	9

CATALOG SECTION P91

Parts List
Switch and Pipeline Fittings

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Junction Terminal Box	14
Lug Bolts, Nuts and Washers	30
Pipe and Pipe Carriers	4
Plunger Lock	26
Rods, detector	10
Rods, insulated	4
Rods, lock rod connecting	6
Rods, screw jaw	4
Rods, solid jaw	4 & 6
Rods, switch circuit controller	10
Rods, tang end	4
Roller Bearings	28
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Switch Adjustment Brackets	6
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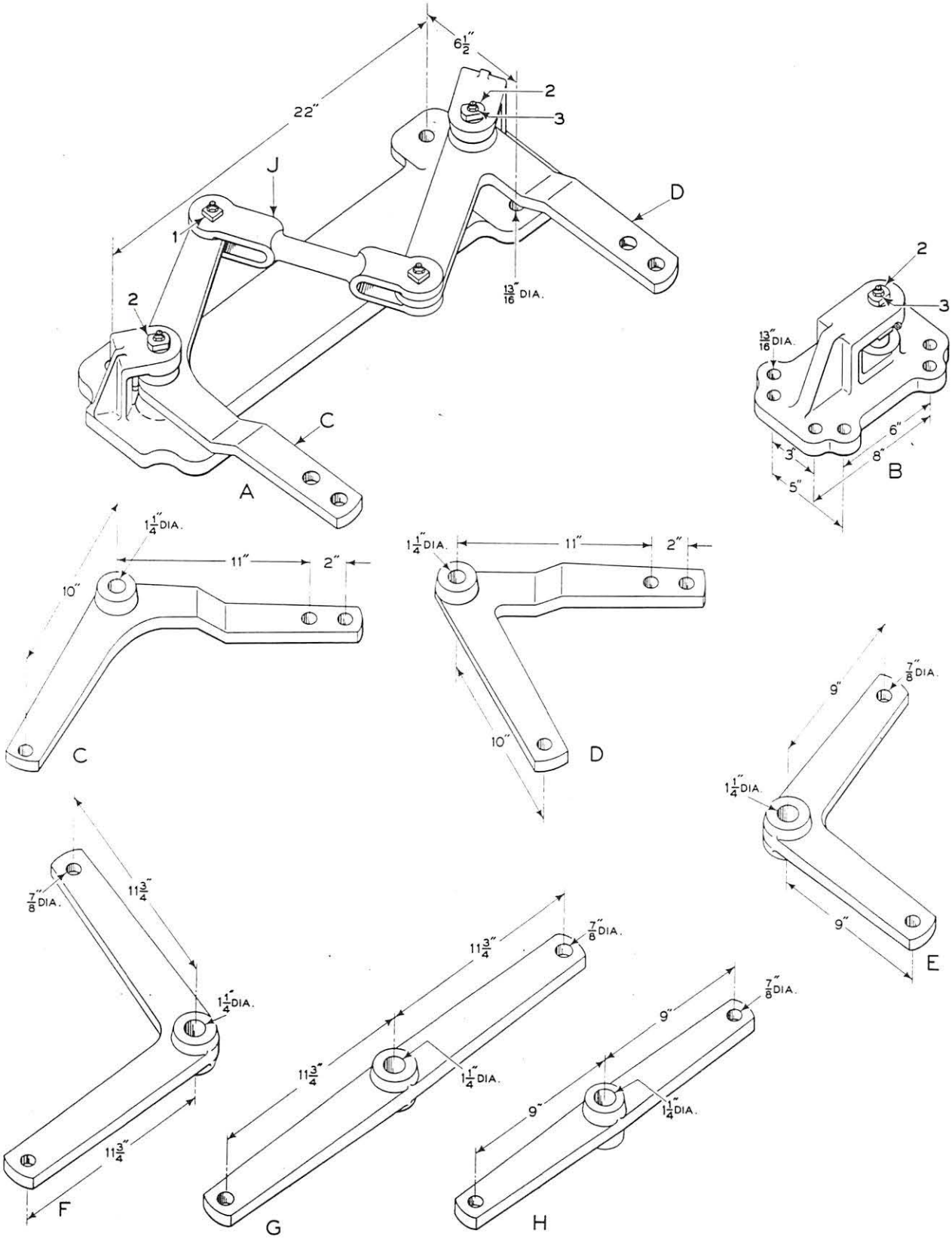


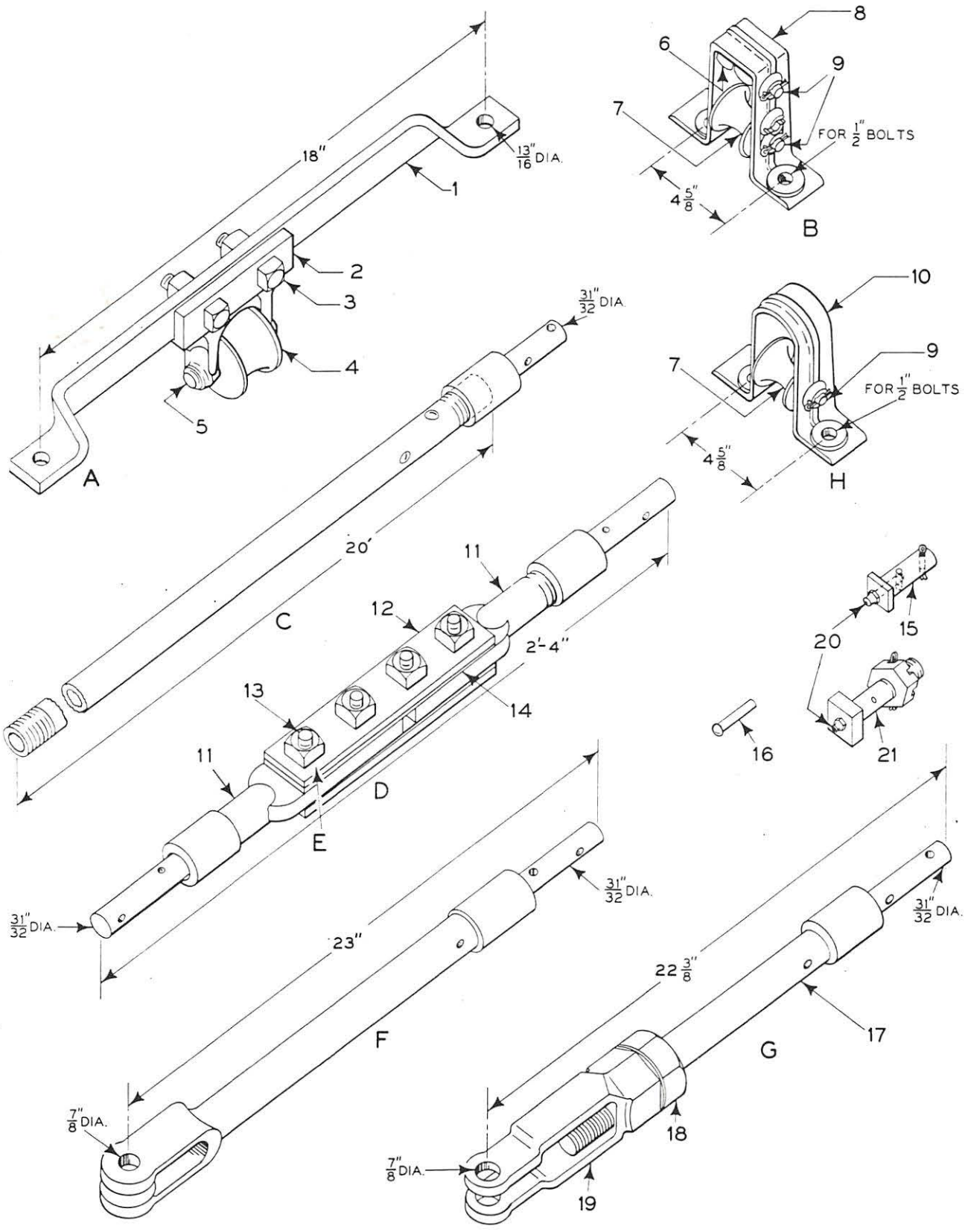
Pipeline fittings.

Pipeline Fittings

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	COMPENSATOR, PIPE, one way, with 10" x 11"-13" cranks	A91-100
B	CRANK STAND, horizontal, with 1 1/4" dia. pin	A91-101
C	CRANK, obtuse angle, 10" x 11"-13"	A91-102
D	CRANK, acute angle, 10" x 11"-13"	A91-103
E	CRANK, right angle, 9" x 9"	A91-104
F	CRANK, right angle, 11 3/4" x 11 3/4"	A91-105
G	COMPENSATOR, straight arm, 11 3/4" x 11 3/4"	A91-106
H	COMPENSATOR, straight arm, 9" x 9"	A91-107
J	LINK, connecting, 11" centers	A91-108
1	PIN, 7/8" dia., x 2 1/4" long, with cotter and grease fitting	P91-100
1A	PIN only	P91-101
2	PIN, 1 1/4" dia., x 5" long, with cotter and grease fitting	P91-102
2A	PIN only	P91-103
3	FITTING, grease	P81-140



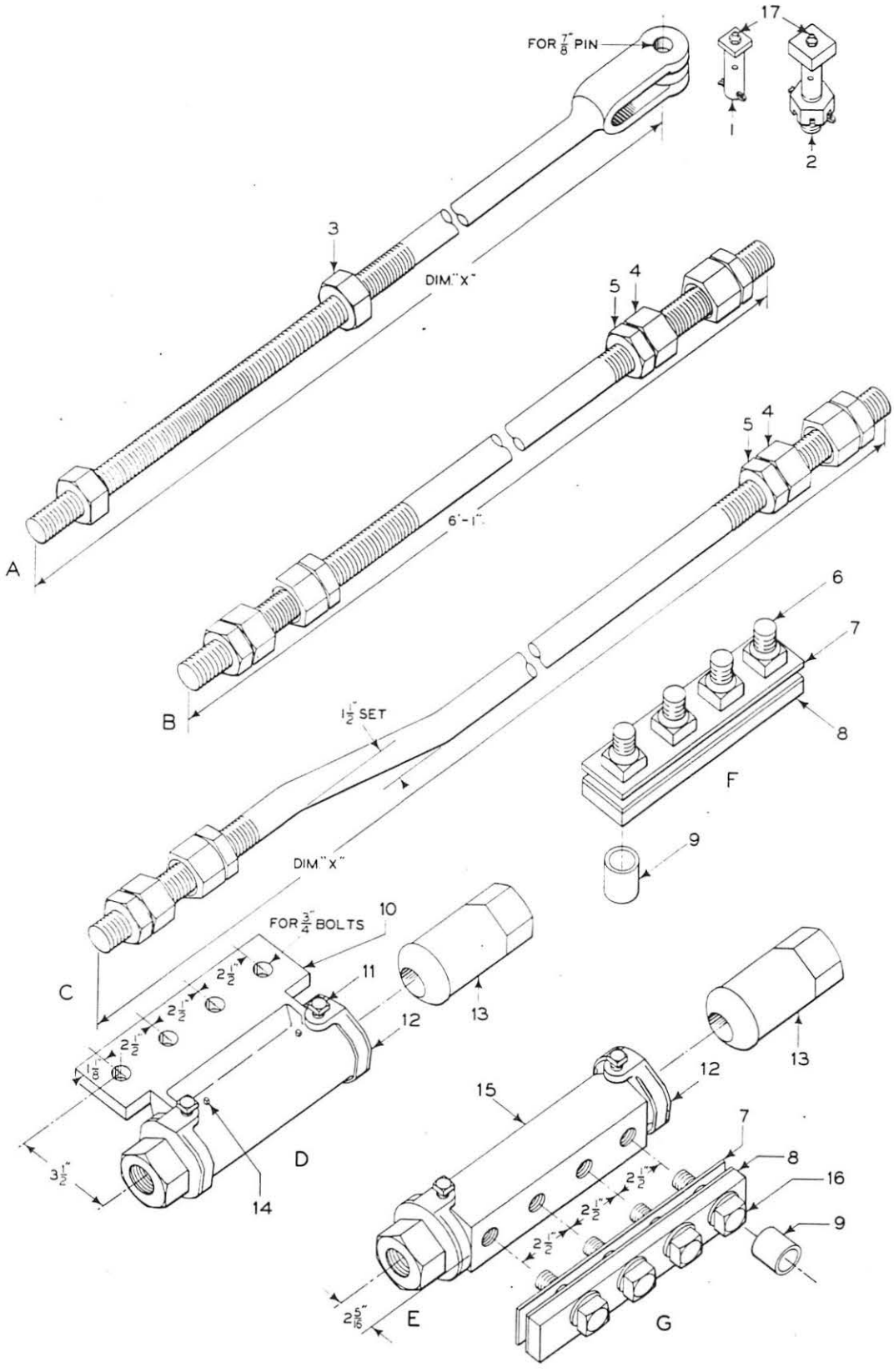
Pipeline fittings.

Pipeline Fittings
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	PIPE CARRIER, one way	A91-120
B	PIPE CARRIER, one way, with double rollers	A91-121
C	PIPE, 1" galvanized, 20' long, with plug 10" long, four holes, with rivets and coupling	A91-122
D	INSULATED ROD, 1 1/4"; two tanged ends for 1" pipe	A91-123
E	INSULATION SET, includes top and bottom insulating and connecting plates, bushings, bolts, nuts and lock washers	A91-124
F	SOLID JAW ROD, 1 1/4", tanged for 1" pipe	A91-125
G	SCREW JAW ROD, tanged for 1" pipe	A91-126
H	PIPE CARRIER, one way, with single roller	A91-130
1	SUPPORT	P91-271
2	HANGER	P91-291
3	BOLT, 1/2"-13 x 2" sq. hd., with sq. nut, for fastening hanger to support	P91-233
3A	WASHER, lock, for above	P81-104
4	ROLLER	P91-254
5	PIN, for roller	P91-259
6	ROLLER, upper, two required	P91-258
7	ROLLER, lower	P91-255
8	STAND, only, for Ref. B	P91-252
9	PIN, for rollers Refs. 6 and 7	P91-256
10	STAND, only, for Ref. H	P91-253
11	ROD, only	P91-300
12	PLATE, connecting	P91-302
13	BOLT, 5/8"-11 x 2 1/2" sq. hd. with hex. nut, for center connection	P91-237
13A	WASHER, lock for above	P85-109
14	PLATE, insulation	P91-301
15	PIN, 7/8" dia., x 2 1/4" long, with cotter and grease fitting	P91-100
15A	PIN, only	P91-101
16	RIVET, 1/4" x 1 11/16" rd. hd.	P91-112
17	ROD, only	P91-288
*18	NUT, 1 1/4" - 7 x 3/4" thick, American std. heavy hex.	P91-111
19	SCREW JAW only, 1 1/4"	P91-110
20	FITTING, grease	P81-140
21	BOLT, 7/8" - 9 x 2 3/4" sq. hd., with hex. nut, cotter and grease fitting	P91-120

*Commercial item.



Switch fittings.

Switch Fittings

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	SOLID JAW ROD, 1 1/4", Dim. "X" = 3'-6"	A91-135
A1	As above, except Dim. "X" = 6'-0"	A91-136
A2	Same as Ref. A, except Dim. "X" = 9'-9"	A91-137
A3	Same as Ref. A, except Dim. "X" = 12'-0"	A91-138
B	LOCK CONNECTING ROD, 1 1/4", straight, 6'-1" overall	A91-139
C	LOCK CONNECTING ROD, 1 1/4", 1 1/2" offset, Dim. "X" = 5' - 7".	A91-140
C1	As above, except Dim. "X" = 6'-0"	A91-141
D	SWITCH ADJUSTMENT BRACKET, for horizontal rod connection	A91-142
E	SWITCH ADJUSTMENT BRACKET, for vertical rod connection	A91-143
F	INSULATION SET, for horizontal bracket Ref. D, includes insulating plates and splice plate, bushings, bolts, nuts and lock washers, for 3/4" thick transit rods	A91-144
F1	As above, except for 1" thick transit rods	A91-145
F2	Same as Ref. F, except for 1 1/4" thick transit rods	A91-146
G	INSULATION SET, for vertical bracket Ref. E, includes insulating plates and splice plate, bushings, bolts and lock washers, for 3/4" thick transit rods	A91-147
G1	As above, except for 1" thick transit rods	A91-148
G2	Same as Ref. G, except for 1 1/4" thick transit rods	A91-149
1	PIN, 7/8" dia. x 2 1/4" long, with cotter and grease fitting	P91-100
1A	PIN, only	P91-101
2	BOLT, 7/8" - 9 x 2 3/4" sq. hd., with hex. nut, cotter and grease fitting	P91-120
2A	BOLT, only, with hex. nut	P91-121
*3	NUT, 1 1/4" - 7 x 1 1/4" thick, American Std., heavy hex	P91-111
4	NUT, cup, 1 1/4" - 7 x 1 1/4" thick hex	P91-122
*5	NUT, 1 1/4" - 7 x 3/4" thick, American Std., jam	P91-123
6	BOLT, 3/4" - 10 x 3 1/4" sq. hd., with sq. nut, for 3/4" thick transit rod	P91-239
6A	As above, except 3 1/2" long, for 1" thick transit rod	P91-243
6B	Same as Ref. 6, except 3 3/4" long, for 1 1/4" thick transit rod	P91-245
6C	WASHER, lock, for above	P85-105
7	PLATE, insulation	P91-329
8	PLATE, connecting	P91-312
9	BUSHING, insulation for bolt Refs. 6 & 16	P91-311
9A	BUSHING, insulation for bolt Refs. 6A & 16A	P91-328
9B	BUSHING, insulation for bolt Refs. 6B & 16B	P91-267
10	BRACKET, only	P91-317

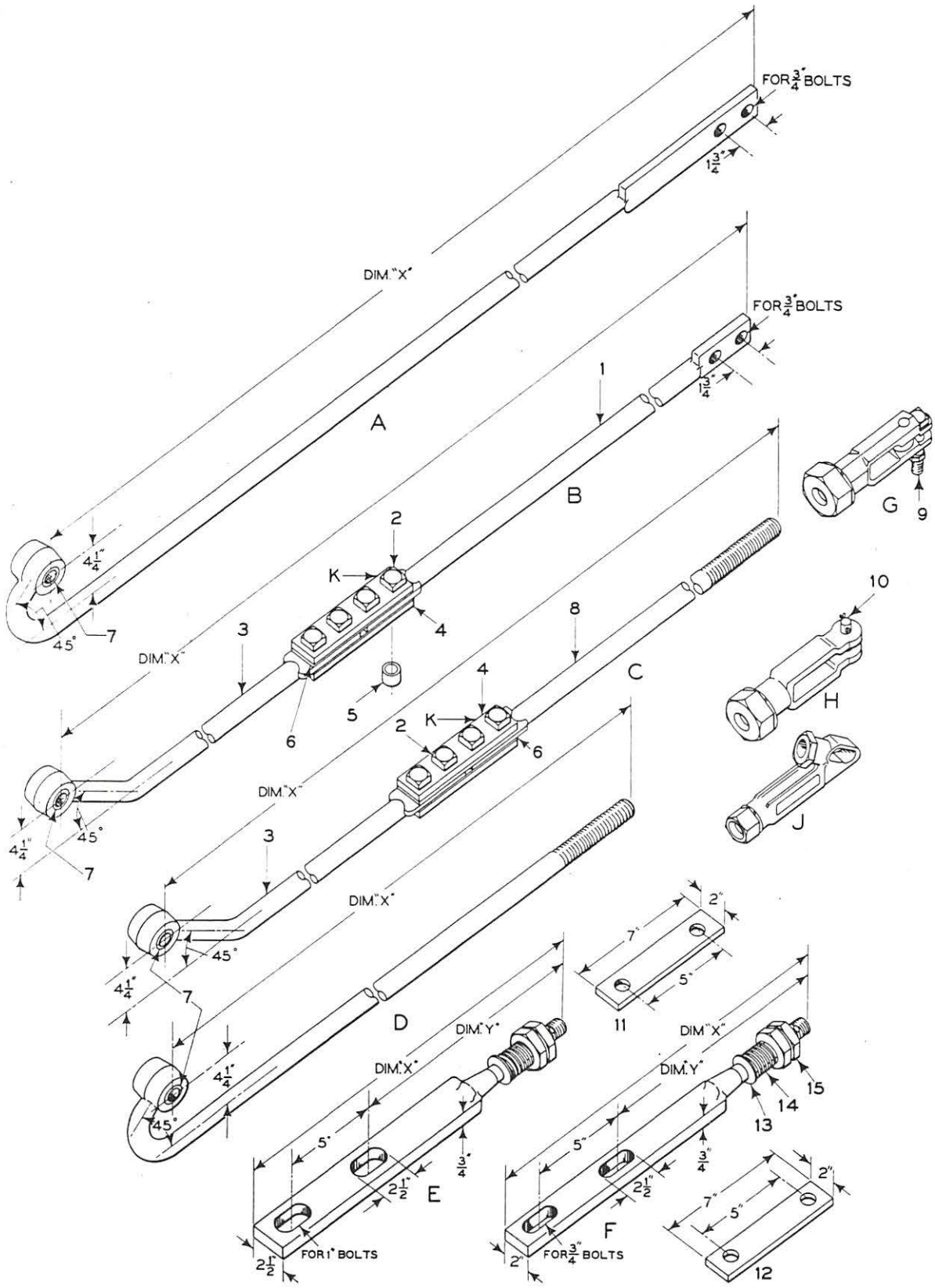
Switch Fittings
Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
11	SCREW, for bracket	P91-266
12	CAP, for bracket	P91-333
12A	WASHER, for above	P91-287
13	NUT, 1 1/4" - 7 adjusting	P91-124
14	PLUG, pipe	P85-131
15	BRACKET, only	P91-316
16	BOLT, 3/4" - 10 x 2 1/2" sq. hd., for 3/4" thick transit rod	P91-241
16A	As above, except 2 3/4" long, for 1" thick transit rod	P91-242
16B	Same as Ref. 16, except 3" long, for 1 1/4" thick transit rod	P91-337
17	FITTING, grease	P81-140

*Commercial item.

Memoranda



Connecting rods, etc.

Point Detector Connecting Rods, Switch Circuit Controller Rods and Jaws, Point Lugs

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	**POINT DETECTOR CONNECTING ROD, 1" dia., with tapered bushing, Dim. "X" = 3'-0"**	A91-160
A1	As above, except Dim. "X" = 3'-8"	A91-161
A2	Same as Ref. A, except Dim. "X" = 3'-11"	A91-162
A3	Same as Ref. A, except Dim. "X" = 6'-1"	A91-163
A4	Same as Ref. A, except Dim. "X" = 6'-7"	A91-164
B	**POINT DETECTOR CONNECTING ROD, 1" dia., insulated, with tapered bushing, Dim. "X" = 6'-4"**	A91-170
B1	As above, except Dim. "X" = 6'-8 1/2"	A91-171
B2	Same as Ref. B, except Dim. "X" = 7'-0"	A91-172
B3	Same as Ref. B, except Dim. "X" = 7'-2 1/2"	A91-173
B4	Same as Ref. B, except Dim. "X" = 7'-8 1/2"	A91-174
B5	Same as Ref. B, except Dim. "X" = 7'-10"	A91-175
B6	Same as Ref. B, except Dim. "X" = 8'-9"	A91-176
C	**SWITCH CIRCUIT CONTROLLER ROD, 1" dia., insulated, with tapered bushing, Dim. "X" = 7'-6"**	A91-181
C1	As above, except Dim. "X" = 9'-6"	A91-182
D	**SWITCH CIRCUIT CONTROLLER ROD, 1" dia., with tapered bushing, Dim. "X" = 2'-10"**	A91-190
D1	As above, except Dim. "X" = 3'-4"	A91-191
D2	Same as Ref. D, except Dim. "X" = 3'-10"	A91-192
E	**POINT LUG, 3/4" x 2-1/2", Dim. "X" = 15-3/4"; Dim. "Y" = 8-7/8", for rods having tapered bushings**	A91-200
E1	As above, except Dim. "X" = 18-1/2"; Dim. "Y" = 11-5/8"	A91-201
E2	Same as Ref. E except Dim. "X" = 21-1/4"; Dim. "Y" = 14-3/8"	A91-202
E3	Same as Ref. E except Dim. "X" = 24-1/4"; Dim. "Y" = 17-3/8"	A91-203
E4	Same as Ref. E except Dim. "X" = 17-1/8"; Dim. "Y" = 10-1/4"	A91-450
E5	Same as Ref. E except Dim. "X" = 19-7/8"; Dim. "Y" = 13"	A91-451
E6	Same as Ref. E except Dim. "X" = 22-3/4"; Dim. "Y" = 15-7/8"	A91-452
E7	Same as Ref. E except Dim. "X" = 20-1/2"; Dim. "Y" = 13-5/8"	A91-453
F	**POINT LUG, 3/4" x 2", for rods having tapered bushings, Dim. "X" 15-3/4"; Dim. "Y" = 8-7/8"**	A91-207
F1	As above, except Dim. "X" = 18-1/2"; Dim. "Y" = 11-5/8"	A91-208
F2	Same as Ref. F, except Dim. "X" = 21-1/4"; Dim. "Y" = 14-3/8"	A91-209

Point Detector Connecting Rods, Switch Circuit Controller Rods and Jaws, Point Lugs

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
F3	Same as Ref. F, except Dim. "X" = 24-1/4"; Dim. "Y" = 17-3/8" . .	A91-210
F4	Same as Ref. F, except Dim. "X" = 17-1/8"; Dim. "Y" = 10-1/4" . .	A91-460
F5	Same as Ref. F, except Dim. "X" = 19-7/8"; Dim. "Y" = 13"	A91-461
F6	Same as Ref. F, except Dim. "X" = 22-3/4"; Dim. "Y" = 15-7/8" . .	A91-462
F7	Same as Ref. F, except Dim. "X" = 20-1/2"; Dim. "Y" = 13-5/8" . .	A91-463
G	SCREW JAW, 1", with jam nut and lock washer, for ball pin	A91-215
H	SCREW JAW, 1", with jam nut, lock washer and pin	A91-216
J	SOCKET, 1" with jam nut and lock washer	A91-217
K	INSULATION SET, includes insulating and splice plates, bushings, 1/2" x 2 1/4" bolts, nuts and washers	A91-220
1	ROD, only, 5' -2" long	P91-306
1A	As above, except 5'- 3 1/2" long	P91-308
1B	Same as Ref. 1, except 5' - 7 1/2" long	P91-310
1C	Same as Ref. 1, except 6' - 5 1/2" long	P91-305
1D	Same as Ref. 1, except 6' - 1" long	P91-307
1E	Same as Ref. 1, except 6' - 7" long	P91-309
1F	Same as Ref. 1, except 7' - 2 1/2" long	P91-304
2	BOLT, 1/2" - 13 x 2 1/4" sq. hd., with sq. nut, for center connection	P91-236
2A	WASHER, lock, for above.	P81-104
3	ROD, eye, only, 12" long	P91-324
3A	As above, except 13" long.	P91-323
3B	Same as Ref. 3, except 16" long	P91-322
3C	Same as Ref. 3, except 18" long	P91-321
4	PLATE, connecting	P91-320
5	BUSHING, insulating, for bolts Ref. 2	P91-276
6	PLATE, insulation	P91-319
7	BUSHING, for rods	P91-263
8	ROD, only, 5' - 11 1/2" long	P91-327
8A	As above, except 7' - 11 1/2" long	P91-326
9	BOLT, 1/2" - 13 x 2 1/4" sq. hd., with hex. nut, lock washer and cotter.	P91-140

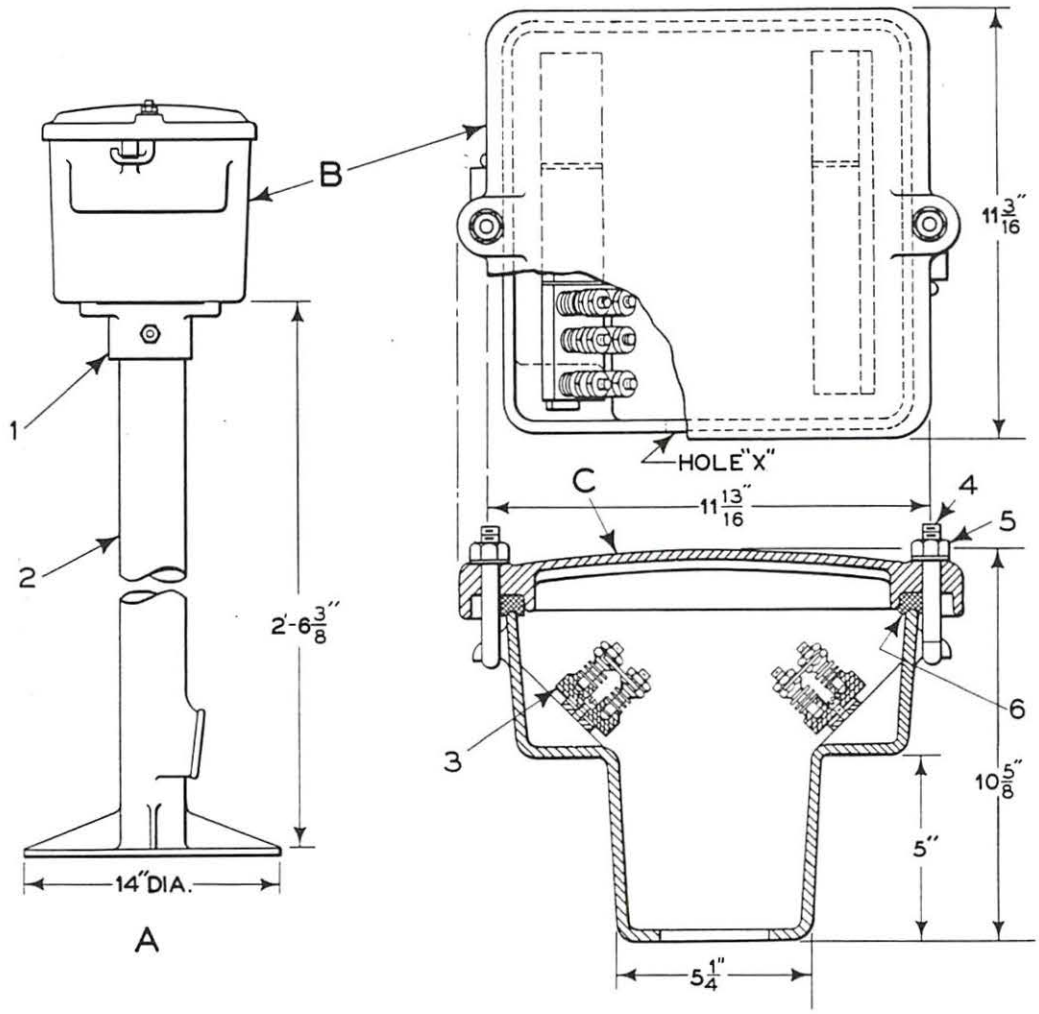
Point Detector Connecting Rods, Switch Circuit Controller Rods and Jaws, Point Lugs

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
10	PIN, 5/8" dia., x 1-13/16" sq. hd., with cotter and grease fitting . .	P91-141
11	WASHER, plate, A. A. R. dwg. 125511, 5" spacing for 1" bolts	P91-145
12	WASHER, plate, A. A. R. dwg. 125512, 5" spacing for 3/4" bolts . . .	P91-146
13	WASHER, for spring	P91-142
14	SPRING	P91-143
*15	NUT, jam, 1" - 8 x 9/16" thick, American Std., heavy hex.	P91-144

* Commercial item.



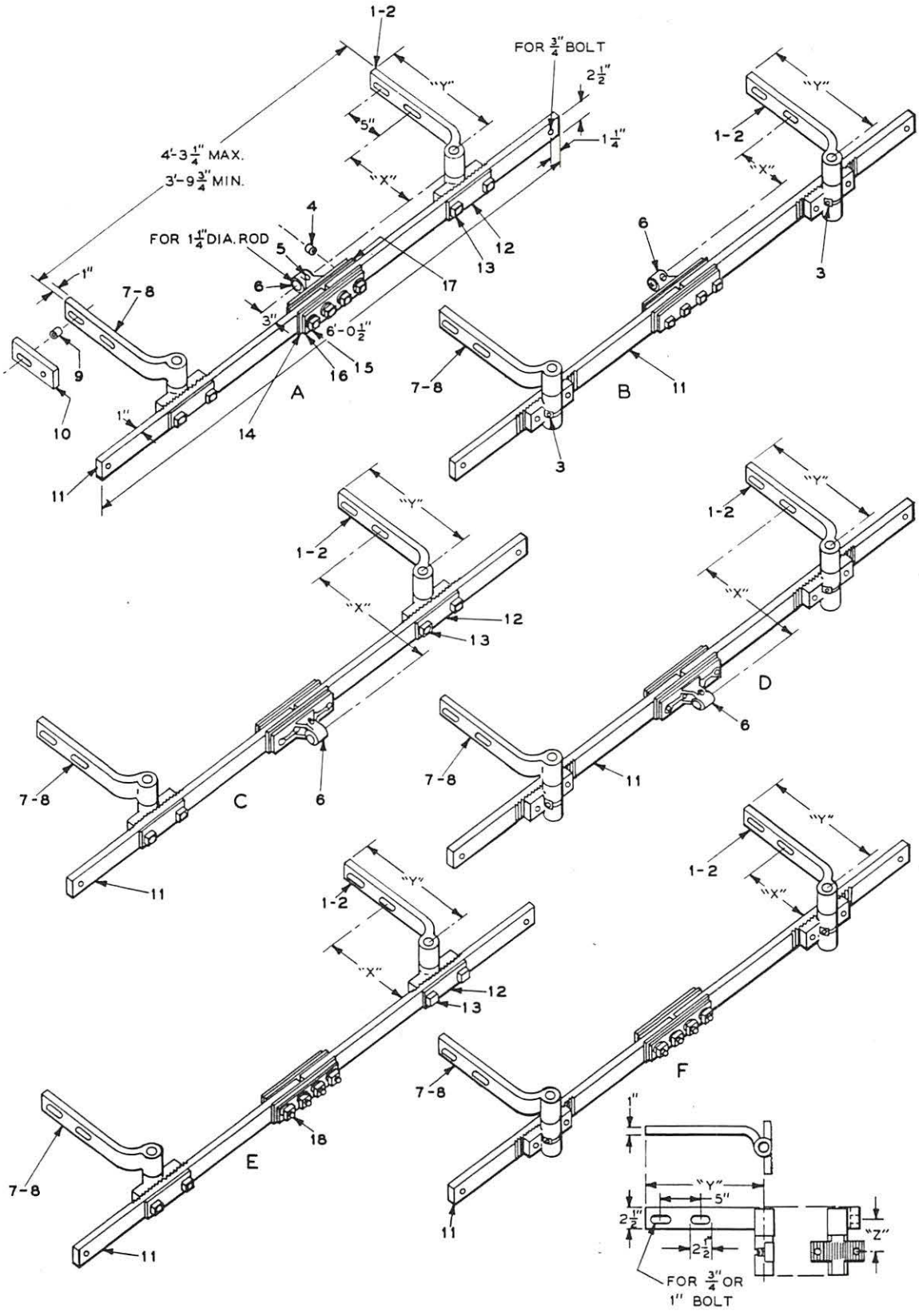
Junction Terminal Box

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	JUNCTION TERMINAL BOX, with pedestal, has 36 terminal posts, hole "X" for 2" conduit	A91-230
B	JUNCTION TERMINAL BOX only, has 36 terminal posts, hole "X" for 2" conduit	A91-231
C	COVER COMPLETE	P91-318
1	ADAPTER, for 3-1/2" pipe	A91-232
2	PEDESTAL, 3-1/2" pipe, with base.	A91-233
3	TERMINAL BLOCK, for references see Section A3	
4	BOLT, hook, for cover	P91-297
5	NUT, for bolt	P81-127
6	GASKET, 3'-8 1/2" long. Specify number of feet.	P85-457

Memoranda



Front rods - hinged type.

Front Rods—Hinged Type

Insulated, Adjustable

Parts List

Order by catalog number and name

REF.	DIM. "Y"	DIM. "X"	DIM. "Z"	CATALOG NUMBER	
				FOR 1" MOUNTING BOLTS	FOR 3/4" MOUNTING BOLTS
A	13-1/8"	3-1/2" to 5"	4-1/4"	A91-330	A91-340
A1	13-1/8"	3-1/2" to 5"	5-3/16"	A91-331	A91-341
A2	15-1/8"	5-1/2" to 7"	4-1/4"	A91-332	A91-342
A3	15-1/8"	5-1/2" to 7"	5-3/16"	A91-333	A91-343
B	13-1/8"	1/2" to 2"	4-1/4"	A91-350	A91-360
B1	13-1/8"	1/2" to 2"	5-3/16"	A91-351	A91-361
B2	15-1/8"	2-1/2" to 4"	4-1/4"	A91-352	A91-362
B3	15-1/8"	2-1/2" to 4"	5-3/16"	A91-353	A91-363
C	13-1/8"	10-1/2" to 12"	4-1/4"	A91-370	A91-380
C1	13-1/8"	10-1/2" to 12"	5-3/16"	A91-371	A91-381
C2	15-1/8"	12-1/2" to 14"	4-1/4"	A91-372	A91-382
C3	15-1/8"	12-1/2" to 14"	5-3/16"	A91-373	A91-383
D	13-1/8"	7-1/2" to 9"	4-1/4"	A91-390	A91-400
D1	13-1/8"	7-1/2" to 9"	5-3/16"	A91-391	A91-401
D2	15-1/8"	9-1/2" to 11"	4-1/4"	A91-392	A91-402
D3	15-1/8"	9-1/2" to 11"	5-3/16"	A91-393	A91-403
E	13-1/8"	6-1/2" to 8"	4-1/4"	A91-410	A91-420
E1	13-1/8"	6-1/2" to 8"	5-3/16"	A91-411	A91-421
E2	15-1/8"	8-1/2" to 10"	4-1/4"	A91-412	A91-422
E3	15-1/8"	8-1/2" to 10"	5-3/16"	A91-413	A91-423
F	13-1/8"	3-1/2" to 5"	4-1/4"	A91-430	A91-440
F1	13-1/8"	3-1/2" to 5"	5-3/16"	A91-431	A91-441
F2	15-1/8"	5-1/2" to 7"	4-1/4"	A91-432	A91-442
F3	15-1/8"	5-1/2" to 7"	5-3/16"	A91-433	A91-443

Front Rods - Hinged Type

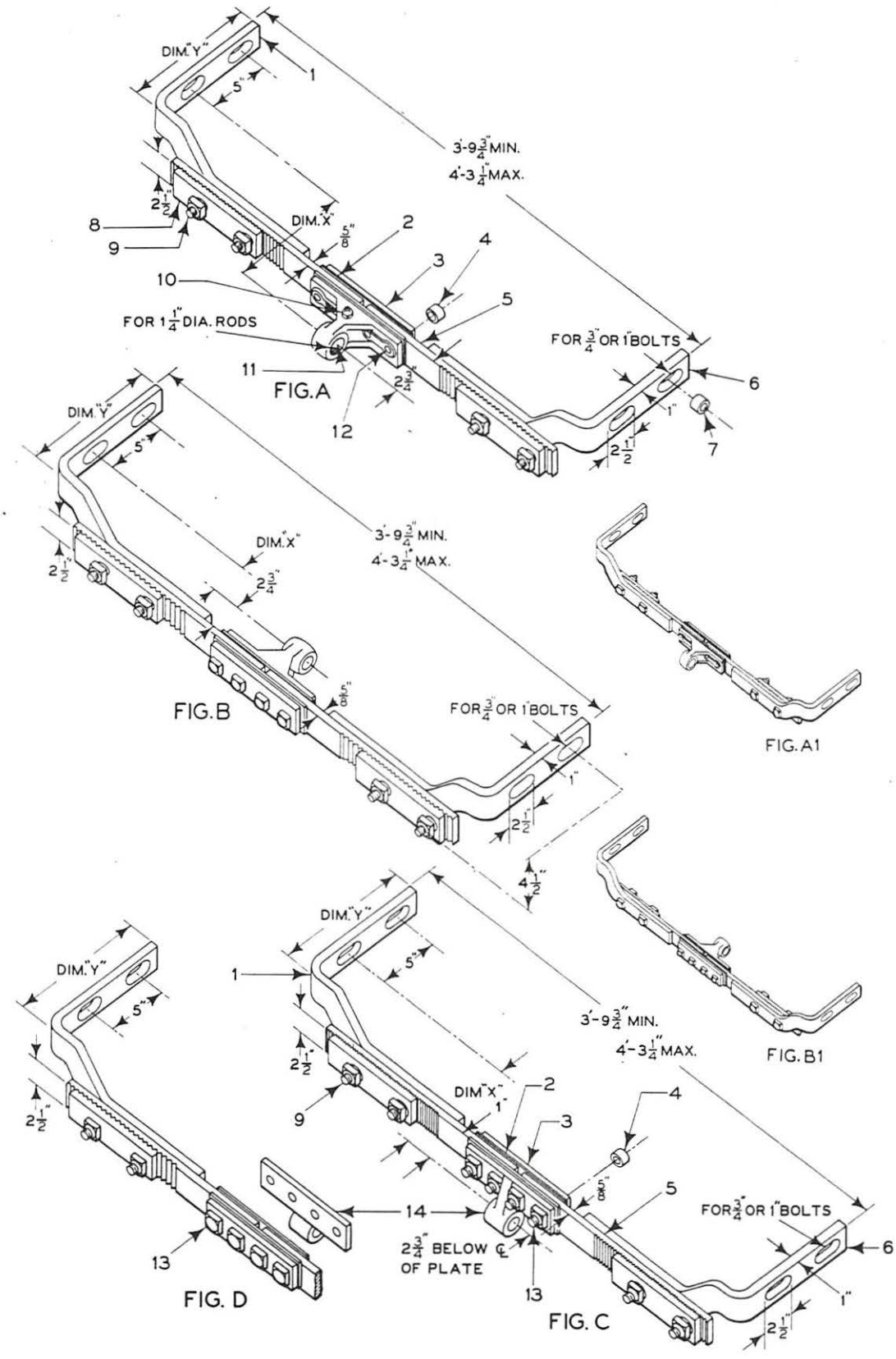
Insulated, Adjustable

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	LUG, right-hand, Dim. "Y" = 13-1/8" long, for rods with Dim. "Z" = 4-1/4"	P91-282
1A	As above, except Dim. "Y" = 15-1/8" long	P91-281
2	LUG, right-hand, Dim. "Y" = 13-1/8" long, for rods with Dim. "Z" = 5-3/16"	P91-284
2A	As above, except Dim. "Y" = 15-1/8" long	P91-283
3	FITTING, grease, for lugs	P5-308
4	BUSHING, insulation, for bolts Ref. 15	P91-328
5	FITTING, grease, for center lug	P85-380
6	LUG, center	P91-290
7	LUG, left-hand, Dim. "Y" = 13-1/8" long, for rods with Dim. "Z" = 4-1/4"	P91-278
7A	As above, except Dim. "Y" = 15-1/8" long	P91-277
8	LUG, left-hand, Dim. "Y" = 13-1/8" long, for rods with Dim. "Z" = 5-3/16"	P91-280
8A	As above, except Dim. "Y" = 15-1/8" long	P91-279
9	BUSHING, for 3/4" mounting bolts	P91-270
10	SHIM, for small rail and low point drilling	P91-248
11	ROD, connecting	P91-273
12	WASHER, plate	P91-261
13	BOLT, 3/4" - 10 x 2 1/2" sq. hd., for mounting point lugs	P91-246
13A	WASHER, lock, for above	P91-223
14	PLATE, insulation	P91-329
15	BOLT, 3/4" - 10 x 3" sq. hd., for center lug connection	P91-337
15A	WASHER, lock, for above	P91-223
16	PLATE, connecting	P91-312
17	PLATE, shim	P91-313
18	BOLT, 3/4" - 10 x 3 1/2" sq. hd., for center connection	P91-180
18A	NUT, for above	P91-251
18B	WASHER, lock, for above	P91-223

Memoranda



Front rods - rigid type.

Front Rods - Rigid Type

Insulated, Adjustable

Parts List

Order by catalog number and name

WITH STRAIGHT LUG AND ASSEMBLED AS PER FIG. A

DIM. "Y"	DIMENSION "X"		CATALOG NUMBER	
	As Shipped	Reassembled in Field as Per Fig. A1	For 1" Mounting Bolts	For 3/4" Mounting Bolts
11 1/2"	7 1/8" to 8 5/8"	5 1/2" to 7"	A91-260	A91-262
13 1/2"	9 1/8" to 10 5/8"	7 1/2" to 9"	A91-261	A91-263

WITH STRAIGHT LUG AND ASSEMBLED AS PER FIG. B

DIM. "Y"	DIMENSION "X"		CATALOG NUMBER	
	As Shipped	Reassembled in Field as Per Fig. B1	For 1" Mounting Bolts	For 3/4" Mounting Bolts
11 1/2"	1" to 2 1/2"	7/8"	A91-270	A91-272
13 1/2"	3" to 4 1/2"	1 3/8" to 2 7/8"	A91-271	A91-273

WITH DOWNSET LUG AND ASSEMBLED AS PER FIG. C

DIM "Y"	DIMENSION "X"		CATALOG NUMBER	
	As Shipped	Reassembled in Field as Per Fig. A1	For 1" Mounting Bolts	For 3/4" Mounting Bolts
11 1/2"	5 3/8" to 6 7/8"	3 3/4" to 5 1/4"	A91-266	A91-268
13 1/2"	7 3/8" to 8 7/8"	5 3/4" to 7 1/4"	A91-267	A91-269

WITH DOWNSET LUG AND ASSEMBLED AS PER FIG. D

DIM. "Y"	DIMENSION "X"		CATALOG NUMBER	
	As Shipped	Reassembled in Field as Per Fig. B1	For 1" Mounting Bolts	For 3/4" Mounting Bolts
11 1/2"	2 3/4" to 4 1/4"	1 1/8" to 2 5/8"	A91-276	A91-278
13 1/2"	4 3/4" to 6 1/4"	3 1/8" to 4 5/8"	A91-277	A91-279

Front Rods - Rigid Type

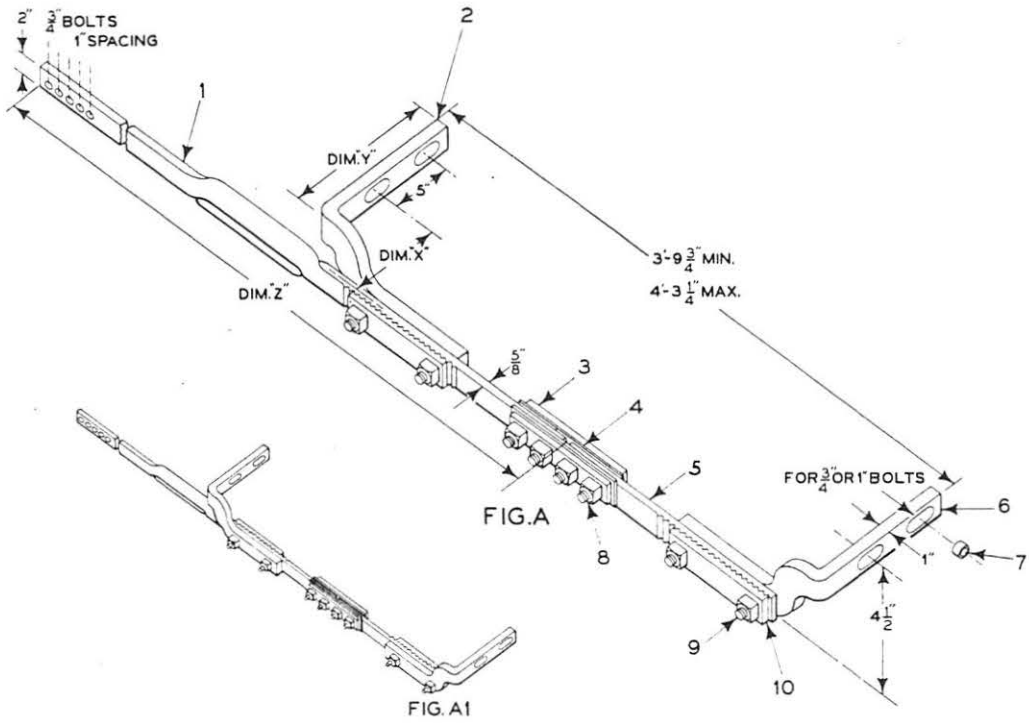
Insulated, Adjustable

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	LUG, left-hand, 11-1/2" long	P91-294
1A	As above, except 13-1/2" long.	P91-293
2	PLATE, insulating	P91-329
3	PLATE, connecting	P91-312
4	BUSHING, insulation, for bolts Ref. 12 and 13	P91-268
5	PLATE, center.	P91-334
6	LUG, right-hand, 11-1/2" long	P91-296
6A	As above, except 13-1/2" long.	P91-295
7	BUSHING, for 3/4" mounting bolts	P91-265
8	WASHER, plate.	P91-262
9	BOLT, 3/4" - 10 x 3-1/2" sq. hd., for fastening point lugs to rods	P91-244
9A	NUT, for above.	P91-221
9B	WASHER, lock, for above	P91-223
10	FITTING, grease.	P85-380
11	LUG, center	P91-290
12	BOLT, 3/4" - 10 x 2-1/4" sq. hd., for center lug connection	P91-247
12A	WASHER, lock, for above	P91-223
13	BOLT, 3/4" - 10 x 3-1/4" sq. hd., for fastening center lugs to rods	P91-240
13A	NUT, for above.	P91-221
13B	WASHER, lock, for above	P91-223
14	LUG, center, downset	P91-289

Memoranda



Front rods—rigid type

Front Rods—Rigid Type

Insulated, Adjustable

With Continuous Lock Rod Connection

Parts List

ASSEMBLED AS PER FIG. A

DIM. "Z"	DIM. "Y"	DIMENSION "X"		CATALOG NUMBER	
		As Shipped	Reassembled in Field as Per Fig. A1	For 1" Mounting Bolts	For ¾" Mounting Bolts
5'-3"	13½"	6 1/16"-7 9/16"	4 7/16"-5 15/16"	A91-280	A91-284
"	11½"	4 1/16"-5 9/16"	2 7/16"-3 15/16"	A91-281	A91-285
3'-11"	13½"	6 1/16"-7 9/16"	4 7/16"-5 15/16"	A91-282	A91-286
"	11½"	4 1/16"-5 9/16"	2 7/16"-3 15/16"	A91-283	A91-287

Front Rods - Rigid Type

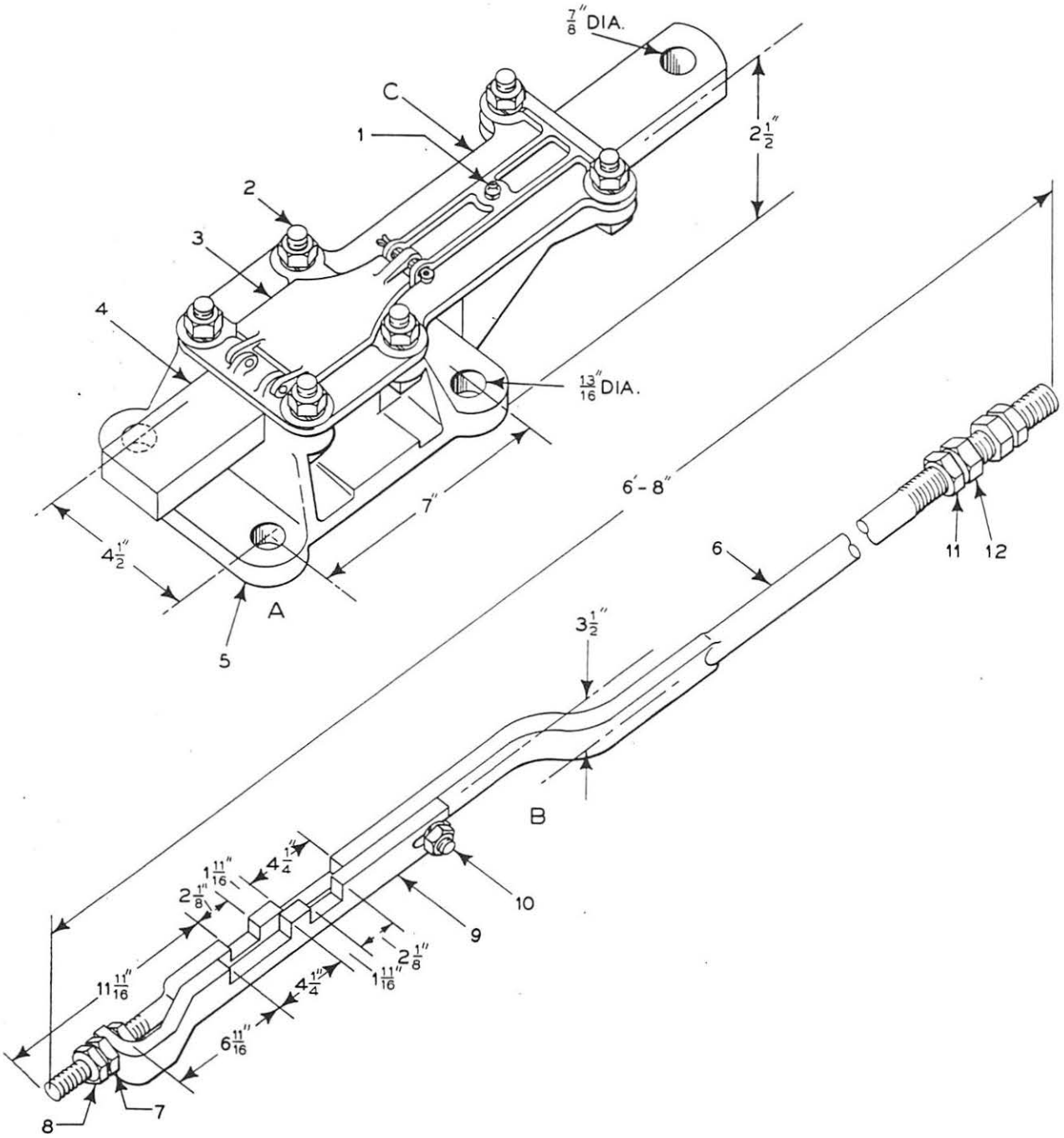
Insulated, Adjustable

With Continuous Lock Rod Connection

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
1	ROD, connecting, 5'-3" long	P91-274
1A	As above, except, 3'-11" long	P91-275
2	LUG, left hand, 13-1/2" long	P91-293
2A	As above, except 11-1/2" long	P91-294
3	PLATE, connecting	P91-312
4	PLATE, insulating	P91-329
5	PLATE, center	P91-334
6	LUG, right hand, 13-1/2" long	P91-295
6A	As above, except 11-1/2" long	P91-296
7	BUSHING, for 3/4" mounting bolts	P91-265
8	BOLT, 3/4"-10 x 3-1/4" sq. hd., for center lug connection	P91-240
8A	NUT, for above	P91-221
8B	WASHER, lock, for above	P91-223
8C	BUSHING, insulation, for bolts Ref. 8	P91-268
9	BOLT, 3/4"-10 x 3-1/2" sq. hd., for fastening point lugs to rods	P91-244
9A	NUT, for above	P91-221
9B	WASHER, lock, for above	P91-223
10	WASHER, plate	P91-262



Plunger lock.

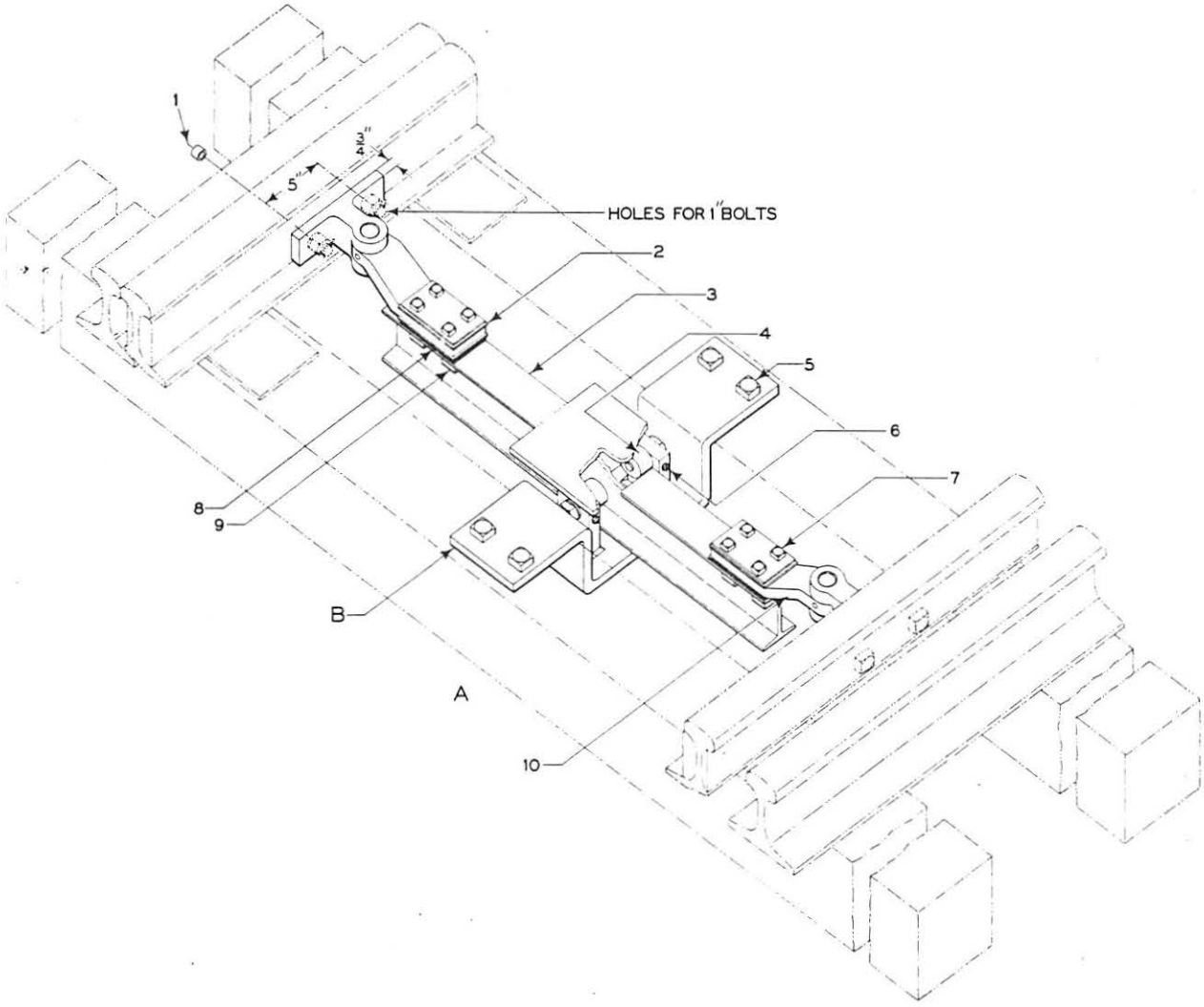
Plunger Lock

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	PLUNGER LOCK, for use with rod Ref. B	A91-300
B	LOCK ROD, 1-1/2" dia., adjustable	A91-301
C	COVER COMPLETE	P91-292
1	FITTING, grease	P85-378
2	BOLT & NUT, for fastening cover to base	P91-299
2A	WASHER, lock, for above	P81-104
3	COVER, only, with rivets	P91-332
4	PLUNGER	P91-257
5	BASE	P91-314
6	ROD, only	P91-285
7	NUT, sleeve, 3/4" - 10 x 2" thick, hex	P91-315
8	NUT, 3/4" - 10 x 3/4" thick, hex	P91-220
9	PLATE, adjusting	P91-330
10	BOLT, for fastening adjusting plate to rod	P87-113
10A	NUT, for above	P91-220
10B	WASHER, for above	P50-100
*11	NUT, 1-1/2" - 7 x 3/4" thick, American Std	P91-123
12	NUT, cup, 1-1/4" - 7 x 1-1/4" thick, hex	P91-122

* Commercial Item



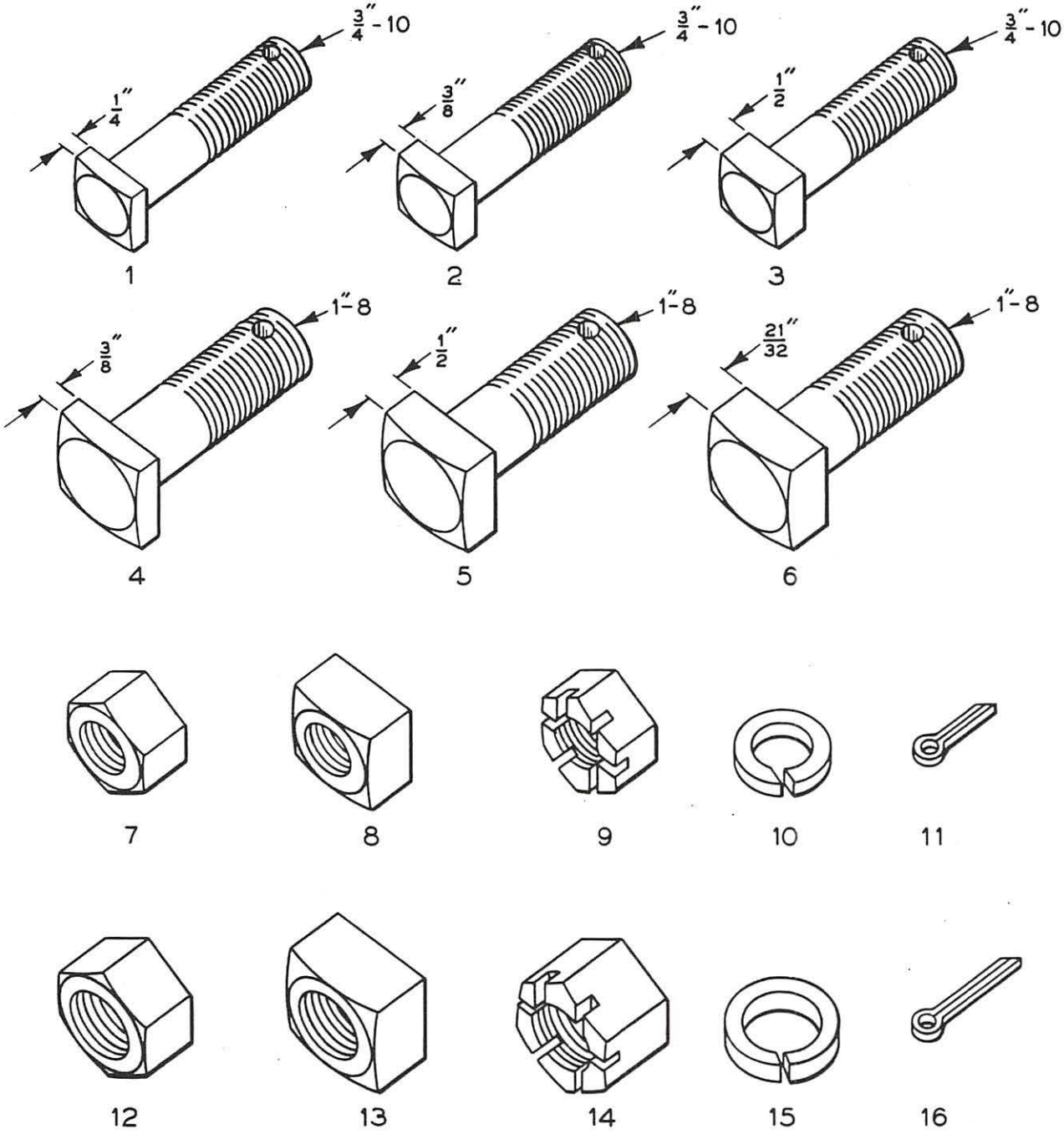
Roller bearings.

Roller Bearings

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	ROLLER BEARING, articulated, fits any size rail, does not include bolts for attaching to rails	A91-320
B	ROLLER COMPLETE	P91-336
1	BUSHING, used with 3/4" bolts	P91-264
2	PLATE, insulation	P91-250
3	BEAM COMPLETE	P91-286
4	BEARING, only	P91-272
4A	NUT, for above	P91-238
4B	WASHER, lock, for above	P85-117
5	SCREW, lag, for mounting roller	P91-234
6	FITTING, grease	P85-380
7	BOLT, for fastening lugs to beam	P91-331
7A	NUT, for above	P91-249
7B	WASHER, lock, for above	P91-235
7C	BUSHING, for above	P91-269
8	SHIM	P91-335
9	WASHER, bevel	P91-298
10	LUG COMPLETE, for 3/4" to 1" bolts	P91-260



Lug bolts, nuts and washers.

Lug Bolts, Nuts and Washers

Parts List

Order by catalog number and name

REF.	SIZE	THICKNESS OF HEAD	LENGTH UNDER HEAD	CATALOG NUMBER
1	3/4"-10	1/4"	3 1/2"	P91-160
1a	"	"	4"	P91-161
1b	"	"	4 1/2"	P91-162
1c	"	"	5"	P91-163
1d	"	"	5 1/2"	P91-164
2	"	3/8"	3 1/2"	P91-170
2a	"	"	4"	P91-171
2b	"	"	4 1/2"	P91-172
2c	"	"	5"	P91-173
2d	"	"	5 1/2"	P91-174
3	"	1/2"	3 1/2"	P91-180
3a	"	"	4"	P91-181
3b	"	"	4 1/2"	P91-182
3c	"	"	5"	P91-183
3d	"	"	5 1/2"	P91-184
4	1"-8	3/8"	3 1/2"	P91-190
4a	"	"	4"	P91-191
4b	"	"	4 1/2"	P91-192
4c	"	"	5"	P91-193
4d	"	"	5 1/2"	P91-194
5	"	1/2"	3 1/2"	P91-200
5a	"	"	4"	P91-201
5b	"	"	4 1/2"	P91-202
5c	"	"	5"	P91-203
5d	"	"	5 1/2"	P91-204
6	"	21/32"	3 1/2"	P91-210
6a	"	"	4"	P91-211
6b	"	"	4 1/2"	P91-212
6c	"	"	5"	P91-213
6d	"	"	5 1/2"	P91-214

Lug Bolts, Nuts and Washers

Parts List

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
* 7	NUT, 3/4"-10, American std., heavy hex	P91-220
* 8	NUT, 3/4"-10, American std., heavy square	P91-221
* 9	NUT, 3/4"-10, American std., semi-finished, regular hex., slotted .	P91-222
*10	LOCK WASHER, 3/4".	P91-223
*11	COTTER, for 3/4" sq. and hex. nuts Refs. 7 and 8	P91-224
*11a	As above, except for 3/4" slotted nut Ref. 9.	P91-225
*12	NUT, 1"-8, American std., heavy hex.	P91-226
*13	NUT, 1"-8, American std., heavy square	P91-227
*14	NUT, 1"-8, American std., semi-finished, heavy hex., slotted	P91-228
*15	LOCK WASHER, 1"	P91-229
*15a	As above, except 1 1/4"	P91-230
*16	COTTER, for 1" sq. and hex. nuts Refs. 12 and 13	P91-231
*16a	As above, except for 1" slotted nut Ref. 14	P91-232

*Commercial items.

CATALOG SECTION P91

CROSS - INDEX

SWITCH AND PIPELINE FITTINGS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P91-100			PIN	3,
	730-41		PIN	5,
	044		COTTER	7
	34232-31		FITTING	
P91-101	730-41		PIN	3,
				5,7
P91-102			PIN	3
	30291-11		PIN	
	049		COTTER	
	34232-31		FITTING	
P91-103	30291-11		PIN	3
P91-110	959		JAW	5
P91-111	545-7		NUT	5,
				7
P91-112	39554		RIVET	5
P91-120			BOLT	5,
	38186-17		BOLT	7
	47191-9		NUT	
	34232-21		FITTING	
	046		COTTER	
P91-121			BOLT	7
	38186-17		BOLT	
	47191-9		NUT	
P91-122	545-11		NUT	7,
				27
P91-123	2813		NUT	7,
				27
P91-124	44921-2		NUT	8
P91-140			BOLT	12
	49527-6		BOLT	
	38931-2		NUT	
	041		COTTER	
	01273-10		WASHER	
P91-141			PIN	13
	8237-1		PIN	
	042		COTTER	
	34232-31		FITTING	
P91-142	626-59		WASHER	13
P91-143	586-102		SPRING	13
P91-144	0477		NUT	13
P91-145	5656-32		WASHER	13
P91-146	5656-33		WASHER	13
P91-160	1889-5		BOLT	31
P91-161	1889-7		BOLT	31
P91-162	1889-29		BOLT	31
P91-163	1889-35		BOLT	31
P91-164	1889-26		BOLT	31
P91-170	43254-46		BOLT	31
P91-171	43254-24		BOLT	31
P91-172	43254-44		BOLT	31
P91-173	43254-45		BOLT	31
P91-174	43254-47		BOLT	31
P91-181	542-31		BOLT	31
P91-182	542-28		BOLT	31
P91-183	542-70		BOLT	31
P91-184	542-103		BOLT	31
P91-190	46461-71		BOLT	31
P91-191	46461-69		BOLT	31
P91-192	46461-91		BOLT	31
P91-193	46461-101		BOLT	31
P91-194	46461-162		BOLT	31
P91-200	46461-159		BOLT	31
P91-201	46461-52		BOLT	31
P91-202	46461-51		BOLT	31
P91-203	46461-83		BOLT	31
P91-204	46461-142		BOLT	31
P91-210	46461-175		BOLT	31
P91-211	46461-120		BOLT	31
P91-212	46461-176		BOLT	31
P91-213	46461-118		BOLT	31
P91-214	46461-84		BOLT	31
P91-221	0229		NUT	22,
				25,32
P91-222	35315-13		NUT	32
P91-224	043		COTTER	32
P91-225	045		COTTER	32
P91-227	0199-4		NUT	32
P91-228	47561-10		NUT	32
P91-229	0570-2		WASHER	32
P91-230	01273-17		WASHER	32
P91-231	048		COTTER	32
P91-232	0213		COTTER	32
P91-233	42186		BOLT & NUT	5
P91-234	067-1		SCREW	29
P91-236	0136		BOLT & NUT	12
P91-237	0149		BOLT & NUT	5
P91-238	523-10		NUT	29
P91-239			BOLT & NUT	7
	542-73		BOLT	
	0229-1		NUT	
P91-241	542-55		BOLT	8
P91-242	6013-21		BOLT	8

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SWITCH AND PIPELINE FITTINGS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P91-243			BOLT & NUT	7
	542-104		BOLT	
	0229-1		NUT	
P91-244	542-88		BOLT	22, 25
P91-245			BOLT & NUT	7
	542-130		BOLT	
	0229-1		NUT	
P91-246	542-109		BOLT	18
P91-247	542-112		BOLT	22
P91-248	559-42		SHIM	18
P91-249	1048-6		NUT	29
P91-250	1403-14		PLATE	29
P91-251	2423-7		NUT	18
P91-252	2694-2		STAND	5
P91-253	2694-3		STAND	5
P91-254	2695-1		ROLLER	5
P91-255	2695-7		ROLLER	5
P91-256	2696-2		PIN	5
P91-257	2797-3		PLUNGER	27
P91-258	2928-1		ROLLER	5
P91-259	2934		PIN	5
P91-260	5375 GR1		LUG	29
P91-261	5656-68		WASHER	18
P91-262	5656-103		WASHER	22, 25
P91-263	6714-367		BUSHING	12
P91-264	6714-276		BUSHING	29
P91-266	6954-1		SCREW	8
P91-267	7350-185		BUSHING	7
P91-268	7350-282		BUSHING	22, 25
P91-269	7350-290		BUSHING	29
P91-270	8104-1		BUSHING	18
P91-271	8699-1		SUPPORT	5
P91-272	12267-6		BEARING	29
P91-273	14709-248		ROD	18
P91-274	14709-249		ROD	25
P91-275	14709-250		ROD	25
P91-276	16779		BUSHING	12
P91-277	17294-8GR1		LUG	18
P91-278	17294-8GR2		LUG	18
P91-279	17294-8GR3		LUG	18
P91-280	17294-8GR4		LUG	18
P91-281	17294-9GR1		LUG	18
P91-282	17294-9GR2		LUG	18
P91-283	17294-9GR3		LUG	18
P91-284	17294-9GR4		LUG	18
P91-285	21758-55		ROD	27
P91-286	22154-1GR2		BEAM	29
P91-287	23332-1		WASHER	8
P91-288	30585		ROD	5
P91-289	30908-144		LUG	22
P91-290	30908-103		LUG	18, 22
P91-291	31353-1		HANGER	5
P91-292	31414-6GR1		COVER	27
P91-293	32328-387		LUG	22, 25
P91-294	32328-388		LUG	22, 25
P91-295	32328-389		LUG	22, 25
P91-296	32328-390		LUG	22, 25
P91-297	35446-7		BOLT	14
P91-298	36797-15		WASHER	29
P91-299	42187		BOLT & NUT	27
P91-300	39003		ROD	5
P91-301	39004		PLATE	5
P91-302	39006		PLATE	5
P91-304	40473-90		ROD	12
P91-305	40473-91		ROD	12
P91-306	40473-96		ROD	12
P91-307	40473-97		ROD	12
P91-308	40473-107		ROD	12
P91-309	40473-119		ROD	12
P91-310	40473-123		ROD	12
P91-311	40639		BUSHING	7
P91-312	40640		PLATE	7, 18, 22, 25
P91-313	40640-12		PLATE	18
P91-314	43450-1		BASE	18, 27
P91-315	43459		NUT	27
P91-316	44920-8		BRACKET	8
P91-317	44920-9		BRACKET	7
P91-318	45520-13GR1		COVER	14
P91-319	46886		PLATE	12
P91-320	46936		PLATE	12
P91-321	46937-50		ROD	12
P91-322	46937-51		ROD	12
P91-323	46937-52		ROD	12
P91-324	46937-60		ROD	12

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SWITCH AND PIPELINE FITTINGS - PARTS LIST

CAT.NO.	DRAWING NO.	QTY	NAME	PG.
P91-326	46938-56		ROD	12
P91-327	46938-71		ROD	12
P91-328	46983		BUSHING	7, 18
P91-329	47409		PLATE	7, 18, 22, 25
P91-330	47559-3		PLATE	27
P91-331	49527-7		BOLT	29
P91-332			COVER & RIVET	27
	49584-8		COVER	
	0220	2	RIVET	
P91-333	51112		CAP	8
P91-334	51994-27		PLATE	22, 25
P91-335	53879-27		SHIM	29
P91-336	57514-1GR1		ROLLER	29
P91-337	6013-2		BOLT	8, 18
P91-338	01273-15		WASHER	32